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The New Steam Frigates.

The six new steam frigates ordered by government, are now all launched,—the last being the *Colorado*, from the Norfolk Navy Yard on the 18th ult. The following is a statement of their relative lengths, measured from fore side of rabbit of stem to aft side of forward stern post, on a line of 12 feet above the lower edge of the rabbit of the keel:

Minnesota,	264	feet	8 1-2 in.
Wabash,	262	"	4 "
Merrimac,	255	"	9 "
Roanoke,	263	"	8 1-4 "
Colorado,	263	"	8 1-4 "
Niagara,	315	"	

Excepting the *Niagara*, they have all been built by government naval architects. The *Merrimac*, thus far, has done little credit to its builders, especially her engines. At least these appear to be her most defective parts, as her recent long passage from Norfolk to Havana, was caused, it is said, from her machinery becoming disabled.

When all these frigates are completed, it is believed here that the *Niagara* will far surpass them all in every respect. If this proves to be the case, it will be a strong argument in favor of letting out government work to public contractors, and abolishing national naval yards altogether.

The Government Arms and their Manufacture.

Our government has twelve large depots for arms, besides two national armories, which manufacture them. In these depots there are 142,000 stand of small arms, guns, pistols, carbines, exclusive of the number issued to the arsenals of the various States and the supply of the army. In 1854–5, the armory at Springfield, Mass., turned out 10,000 muskets and 2,000 cavalry musketoons, while that at Harper's Ferry, in Va., manufactured 9,000 muskets and 2,571 rifles. Colt has manufactured 6,000 of his revolvers for the army. At Watervliet arsenal, Troy, during the same years, were 70,642 stand of arms stored for use, in perfect order. At the Allegheny arsenal, 13,840 muskets and 11,000 pistols were put in order. At the St. Louis arsenal were stored 32,476 stand of fire arms of all kinds. These statistics do not include the cannon, howitzers, and mortars stored at the above-named depots.

Chemical Minuteness.

On the recent trial of Dr. Palmer, in England, for poisoning Mr. Cook, and for which he has been executed, Dr. Herepath, the well known chemist, stated that the presence of strychnine could always be detected, and gave as an important proof that if he put 10 grains into 70,000 grains of water he could detect its presence in a tenth part of a grain of that water.

Nebuchadnezzar Disentombed.

The London *Atlas* says that Colonel Rawlinson has lately found a mummy which is believed to be that of Nebuchadnezzar. The face, which is eminently handsome, is covered with a golden mask. Some *wooly horse* speculation, no doubt. Where's Barnum?

IMPROVEMENTS IN COTTON PRESSES.

Fig. 1

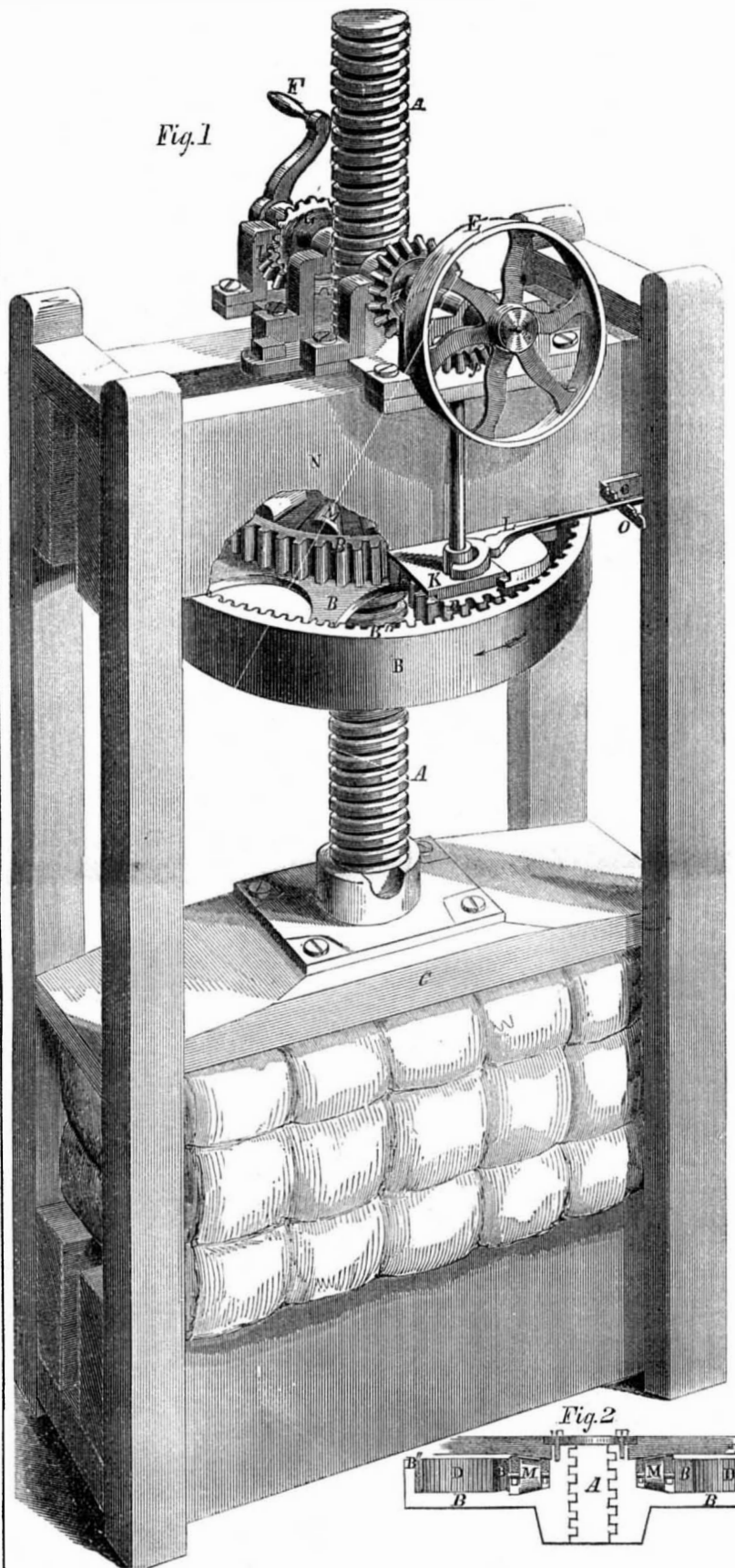
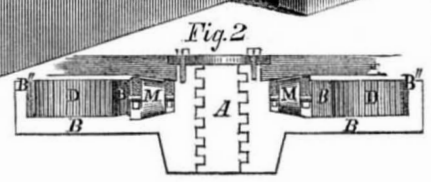


Fig. 2



Improved Cotton Press.

Our engraving illustrates an improvement by Mr. M. L. Parry, of Galveston, Texas. The invention consists in a peculiar arrangement of parts, whereby the movement of the press may be stopped, or reversed, instantly; also in a method of reducing friction, and thus causing the press to operate with ease.

The pressure is obtained by means of a large screw, A, working through a double geared combination nut, B. C is the follower, beneath which the cotton is pressed. The interior part of nut B is hollow, and furnished with two sets of gear teeth, B and B″. A driving pinion, D, is introduced between the teeth B′ and B″. By shifting the pinion, D, so as to cause it to gear with one or the other set of teeth, the direction in which the nut B, moves, will be altered, and the follower, C, raised or depressed.

Power to drive the machine is applied either to the band wheel, E, or crank, F, the shafts of which are separate, each having a gear wheel, G H, communicating respectively through gear wheels, I J, with pinions, D. There are two pinions, D, one on each side, but only one appears in the cut.

In our engraving, pinion D is shown to be in gear with the teeth, B″, on the outer edge of nut B.

The lower bearing of D is on a slide, K, which latter is moved by means of lever, L. Thus, while the upper end of the shaft of pinion, D, is always in gear with the driving power, the lower end may be shifted, by means of lever, L, so as to throw pinion, D, into gear with either set of teeth, B′ B″. The direction in which nut B moves, may be thus instantly changed, but with greater power. When compression is going on, the pinion, D, is in gear with B″, and B moves slowly. But when the follower is to be run up, pinion D is thrown into gear with B′, which, owing to its smaller diameter, causes B to move quickly, little power being needed. If the lever, L. is so moved as to bring pinion D into an intermediate position, between the two sets of teeth, B′ B″, so that it will gear with neither, the motion of the press will be instantly stopped. O is a rest catch to hold lever L.

M are conical friction rollers, sunk in the central parts of nut B. There is an iron plate attached on the under side of frame cross piece, N, against which the rollers, M, press, and thus relieve the nut, B, of friction. See section fig 2.

It will be observed that the various parts of this press are strong, while, as a whole, it is very compact and simple. Its convenience, strength, rapidity of operation, and other advantages will insure for it an extensive introduction. Address the inventor, as above, for further information. Patent applied for.

Curious Experiment with Chalk.

The following is from a late number of the London *Mechanics' Magazine*, by Horatio Prater, in an article on petrifaction:—

"I shall here state what I believe to be a new discovery, viz., that carbonate of lime undergoes fusion at a certain heat, *when surrounded by an atmosphere of carbonic acid gas, without any assistance from pressure.* Sir J. Hall discovered that limestone undergoes fusion under *a pressure* which prevents the escape of its carbonic acid, viz., 173 atmospheres, equal to a column of sea-water of 5,700 feet. I have repeated the experiments above alluded to, which I first performed several years ago, lately, in the following way. Some chalk powder was put at the bottom of a crucible; over this was spread a pretty thick layer of nitrate of potass, in which were pieces of plumbago, common charcoal, and silica; over this, again, was a thin layer of chalk, and the whole was covered with common earth, and heated to redness for two or three hours. On examination, the chalk above and below the nitrate of potass was fused into a *hard*, porous, gray mass, something like some kinds of lava, the pieces of plumbago and chorcoal had totally disappeared, having been converted into carbonic acid gas by the oxygen of the nitrate of potass; the piece of silex was changed to an opaque white by the heat, but otherwise unaltered.

I have no doubt that many of the very hard masses of carbonate of lime seen on the banks of the Nile have been fused in a manner somewhat similar to the above, since the enormous pressure that Sir J. Hall employed can only occur occasionally in nature, and in subterranean parts. An excess of carbonic acid gas is well known to assist the solution of carbonate of lime *in water*. In the above experiments we also observe that it tends to render it *fluid* by fusion."

East India Railroads.

Railroads, upon a truly gigantic scale, are in course of actual construction in British India, in furtherance of which the East India Company have loaned their credit. 1. The East India Railway, to Delhi, 900 miles; 590 miles under contract; 100 miles or more now open and the whole to be completed during the year 1856! 2. The Great India Peninsula Railway from Bombay, 47 miles opened for travel last year.

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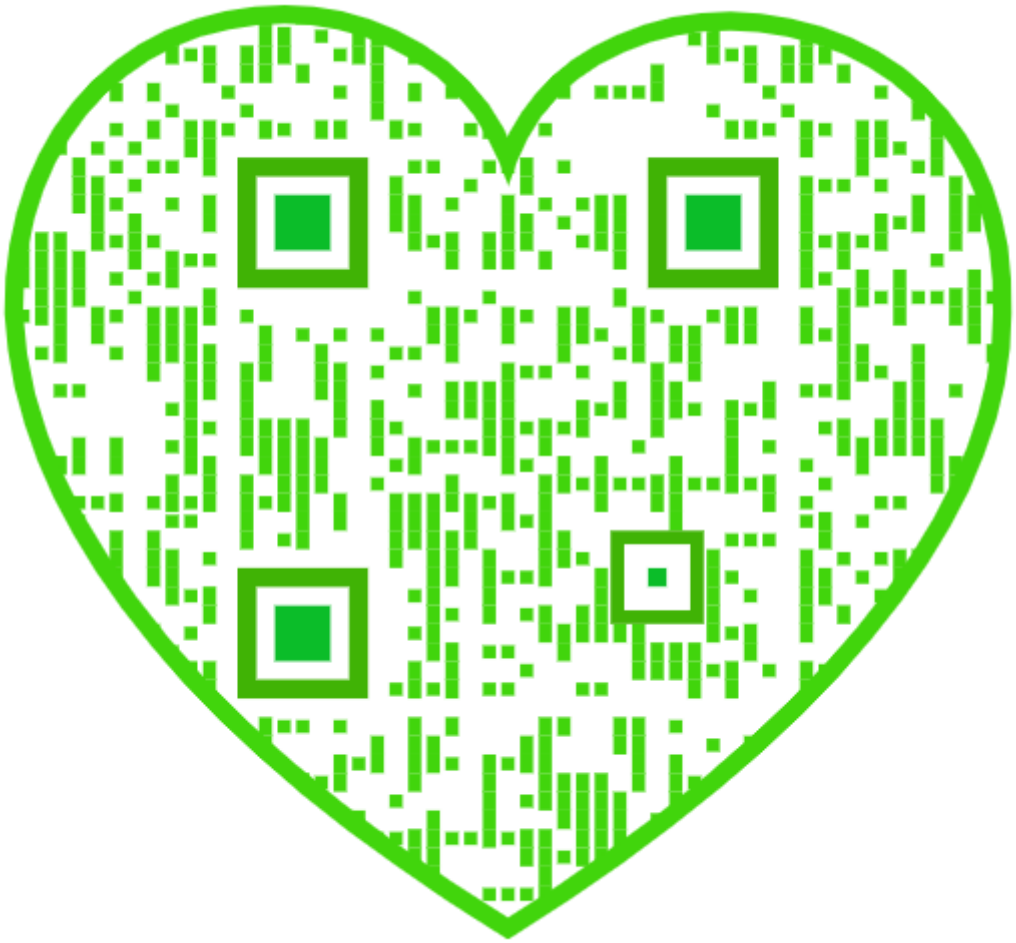

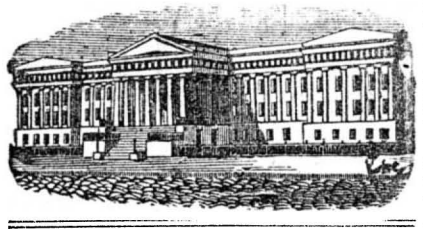

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 25, 1856.

SELF-RAKING SAW—Aza Arnold, of Washington, D. C.: I claim the combination of a retreating motion, as set forth, with the two edged reciprocating saw, by which combination I can give any desired adjustment of cut and feed, at pleasure, to enable the saw to cut during its whole descent.

PRINTING INSTRUMENTS FOR THE BLIND—A. Ely Beach, of Stratford, Conn.: I claim, first, causing the types to strike at a common center, substantially in the manner and for the purposes set forth.

Second, connecting each of the type keys, or their equivalents, with the escapement, by means of a common connection, substantially as described.

SMOOTHING IRONS—Leander W. Boynton, of Worcester, Mass.: I claim forming the lower part of the iron, with side walls projecting above the upper surface thereof, for the double purpose of securing the upper portion to the lower portion, and directing the draft in heating the upper surface of the said lower portion, as set forth, it being understood, however, that I do not claim in itself the making the iron in two portions, with the handle attached to the upper portion, as that is not new, but only the mode of construction, as claimed.

HEMP BREAKERS—R. W. Bowen, of Marshall, Mo.: I claim the peculiar construction of the upper and lower blades of the break, so that they shall approach each other at the same moment, but with different velocities, substantially in the manner described, that is to say, pivoting the lower blades at or near their front ends, in a firm frame, and connecting their rear ends to the top blades, which are pivoted at a point about two-thirds of their length, in a solid frame, and operated in front in any well known manner, for the purposes set forth.

FIRE ARMS—Fordyce Beals, of New Haven, Conn.: I do not claim the use of a metallic frame connected with a chambered breech or cylinder, by means of a pin passing through the frame and cylinder.

Neither do I claim rotating the chambered breech by means of a pawl and ratchet in connection with the hammer.

But I claim the arrangement and combination of parts using the arm pivot or axis in connection with the pawl and hammer, for the purpose of rotating the chambered breech or cylinder, all of which are in the manner and for the purpose described, using the arm pivot or axis in its combination and arrangement of parts, or any other contrivance, substantially the same and producing the same effect.

ALARM LOCK—Julius Cone, of Yellow Springs, Ohio: I claim disconnecting the knob shaft from the latch bolt, thereby dispensing with a key, key hole, separate key bolt, and all devices for operating a key bolt, in the manner set forth.

I also claim placing the alarm spring and scape wheel upon the knob shaft itself, when combined with the arrangement for connecting said knob shaft with, and disconnecting it from the alarm, so that said alarm may not interfere with the ordinary use of the lock simply for a latch.

I also claim the disk, p, constructed and operating in connection with the bolt, alarm, and ward spring, substantially as described, and for accomplishing the various purposes specified.

I also claim the ward spring, M, constructed and arranged, substantially in the manner and for the purposes set forth.

I also claim the notch, j, in the knob shaft, in combination with the slot, k, in the bolt, when arranged and operating substantially in the manner and for the purpose described.

SECURING SHAFTS TO AXLES—Wm, Cox, of Doylestown, Pa.: I claim the two bars, E F, with the jaws, c e, attached to them; the bars, F, being elastic, and having a screw, G, passing through it, on which a nut, f, is fitted. The bars, E F, being attached to the axle, A, substantially as described for the purpose specified.

VISE—H. B. Chaffee, of New York City: I claim the supplementary jaw, E, pivoted to the stationary jaw, A, of the vise, and connected with the weighted pawl, F, substantially as shown, for the purpose set forth.

LIME AND GUANO SPREADERS—Wm. Croasdale, of Hartsville, Pa.; I claim the combination of the cylinder, B, composed in part of the movable strips, s, with the rubbers, M, both being constructed and arranged substantially in the manner and for the purposes set forth.

LOCOMOTIVE LAMPS—S. E. and H. B. Cleaveland, of Buffalo, N. Y.: We claim the arrangement and combination of the valve, A, with the plunger, B, and spring, D D, for the purpose of forcing the oil from the can or reservoir to the burner or wick, substantially as set forth.

ROTARY PUMPS—S. D. Carpenter, of Madison, Wis.: I claim the cones, D D, connected by the propeller, L L L L, in combination with the diaphragm or disk, E E, operating in the manner and for the purpose specified.

I also claim the semi-spherical shells, 2 and 3, in combination with the conducting pipes, arranged substantially in the manner and for the purpose specified.

REAPERS—Owen Dorsey, of Triadelphia, Md.: I do not claim the raking attachment, for that was formerly patented by me.

But I claim driving the sickle or communicating motion thereto, by means of the crank pulley, G, pitman, H, arms, I K L, and shaft, J, arranged as shown, whereby four vibrations of the sickle are obtained at every revolution of the crank pulley, G.

WATER WHEEL—W. M. Davis, of Carmel, Me.: I claim the combination of the scroll plate and water pitches, to secure more beneficially, the direct action of the water in combination with the cone spreading the bottom of the wheel with a curved float, narrowed at the bottom and set spirally upon the cone, which, with the scroll plate and pitches secures the full direct action and re-action force of the water upon the wheel, as set forth.

EDGE PLANES—I. A. Dunham, of North Bridgewater, Mass.: I do not claim a molding stock formed with a throat, so as to receive a movable and adjustable molding cutter; nor do I claim so making a cutter that its molding surface and cutting edge shall be made in one piece of metal.

I claim my improved tool having part of its molding edge stationary and formed with a cutting edge, as specified, and the other part of said molding edge made movable with respect to the first, as specified, and so that while cutting with the tool, the molding surfaces of both parts may rest in contact with the material which is to be cut, my tool enabling me also to polish the reduced surface while a shaving is being removed.

COOLING AND DRAWING FLUIDS FROM CASKS—F. Espenschade, of Williamsport, Pa.: I claim the vessel, C, provided with an ice chamber, E, and having a pump connected with it and the vessel communicating with the barrel, A, by means of the pipe, G, the above parts being arranged substantially as shown for the purpose specified.

FELLING TREES BY SAWS—Geo. C. Ehrsam, of New York City: I claim the collar or band, A, with annular rotating rack or rim, C, attached, and the chisel or cutter, G, fitted within the socket, D, which is attached to the rack or rim, the chisel or cutter having portions of screw threads, f, on its under side, which fit between a spiral thread, E, on the collar or band, A, the whole being arranged substantially as shown for the purpose set forth.

DETACHING HORSES FROM VEHICLES—F. M. English, of Hopkinsville, Ky.: I claim the described combination of pins, P P', with the levers, L L', constructed, arranged, and operating substantially as and for the purposes set forth.

HANGING GRIND STONES—David Hinman, of Berea, Ohio—I claim hanging grind stones in the manner described, having the shaft and flange with or without a cast in one piece with the stone firmly secured thereto by the shrinking of the metal, as set forth.

CUT-OFFS—H. J. and Thos. Hawkins, of Mobile, Ala.: We claim the adjustable cam and self-inserting toe which when combined together on any rock shaft motion for working steam valves, can cut off the steam at any given point on either motion of the piston at a moment's notice, as set forth.

SEED PLANTERS—George Hall, of Morgantown, Va.: I claim hinging the cams that operate the seed slides to the face of the drive wheels, so that they can be swung into or within recesses cut in the face of said wheel, for the purpose of adapting the machine to planting at variable distances apart, as set forth.

PLOTTING INSTRUMENTS—C. R. Iliff of Falmouth, Ky.: In my instrument for constructing geometrical lines, I do not claim the trammel, nor any of the separate adjustments described, in themselves separately.

But I claim the combination of the trammel constructed substantially as specified, with the drawing stand which is provided with the angular and off-set adjustments, as described, whereby an instrument of greatly increased capability is produced.

WRENCH FOR GAS PIPE.—G. A. Jenks, of Worcester, Mass., I do not claim the pipe tongs, made as described, with a curved movable jaw affixed by a pin to a handle having a station jaw, and not provided with a screw adjustment; and I do not claim the combination as patented by the said Bartholomew & Merrick, and on which my invention is an improvement.

But I claim arranging the hook or claw, G, and the spring, E, with respect to the slide, C, and the main bar, A, and hinging or jointing the claw directly to the slide, C, substantially as exhibited.

ENVELOPES—R. T. Knight, of Philadelphia, Pa.: I claim the lapping of the ends of the envelope, b b, fig. 2, when they are to be secured by metallic eyelets, as set forth.

ICE BOATS.—Daniel Large, of Philadelphia, Pa.: I claim the arranging, in the after part of the boat, of the two troughs, for throwing by the power and impulse given by the paddle wheels, the broken and floating ice upon the fast ice on each side of the channel, and thereby keeping the water clear for the passage of vessels, as described.

PORTABLE FIELD FENCE—B. F. Lyon, of Pleasantville, Pa.: I claim, first, the construction of the mortise in my fence posts, in the manner described.

Second, I claim the construction of my rails, in the manner described, with the shoulders and ends of the dovetail round, and also with the dovetails, H and I, made reverse, as shown, and on the opposite sides of the rails.

RUNNING GEAR OF CARRIAGES—Richard Murdoch of Baltimore, Md.: I disclaim the short axles and the manner of turning them about their attachments; such constituting no part of my invention.

I also disclaim supporting the extremities of the axles on stationary train ways during their movement.

But I claim the swivel bar, c, and boxes, b b, in combination with the short axles. a a, connected with the extremities of the cross bar, substantially as described, operating as and for the purposes specified.

TOOL FOR CUTTING METALS—John Mooney, of Providence, R. I.: I claim the use of the blade or cutter, o, of a separate piece of metal inserted in an adjustable clamp, G, constructed and operated in the manner and for the purpose set forth.

TURNING TAPERING FORMS—H. E. Salisbury, of Platea, Pa.: I claim the manner described for operating the revolving cutters, namely, by means of cam, Y, lever, Z, movable face plate, E, with radiating arm, b, passing through slots, c', with slides, d, on revolving face plate, F, for the purpose of opening and closing the cutters, as described, and holding the timber stationary.

I also claim the movable center piece operating as described, and for the purposes set forth, in combination with the feed motion, as set forth.

RUNNING GEAR OF VEHICLES.—Henry Phelps, of White Hall, N. C.: I disclaim spring coupling for vehicles broadly considered, as various devices have been employed for that purpose.

I claim the combination of the elastic rods, i and m, with the rods, c c, d d, e, jointed at f, as described, and operating as and for the purposes set forth.

TUBULAR ELASTIC VALVES—Franklin Peale, of Philadelphia, Pa.: I claim the described method of adapting flexible valves to flexible tubes, and inserting them therein, in the manner set forth and shown.

WIND WHEELS—Francis Peabody, of Salem, Mass.: I claim regulating the velocity of the wind wheel by means of the secondary blades, B, operated in the manner substantially as set forth.

HAND SEEDING MACHINES—S. G. Randall, of Rockford, Ill.: I claim, in combination with the reciprocating motion of the seed slide, the locking and unlocking of it, at each planting operation, so that the tongue shall be firmly held against the resistance of the earth in forcing it, and the sheath therein, substantially as described.

MAKING RAKE TEETH—C. R. Soule, of Fairfield, Vt.: I claim the shaft, C, with loose pulley, D and G, and projection, a, attached and used in connection with the frame, E, and lever, F, with rod, I, attached, and the lever, I, connected with arm, s, having the spring, t, attached. The arm. G, having the lever, H, secured to its end; the above parts being arranged and operating as shown for the purpose specified.

PUG MILL—C. F. Schlickeysen, of Berlin, Prussia.—Patented in England Feb. 24, 1856: I do not intend to claim the use of radial blades or beaters for forcing down clay into or through molds or dies, as that has long been practiced.

But I claim, first, the employment of the clearing knife K, in combination with the hopper, b, the tapering case, c, and beaters, h, operating in the manner substantially as described.

Second, I claim the rotating bottom, m, in combination with the beaters, h, operating in the manner substantially as described.

FOUNTAIN LAMPS—Nicholas Linden, of Jersey City: N. J.: I claim constructing the reservoir, C, of two cylinders, D E, one placed within the other, the inner cylinder, E, being provided with a valve, c. attached to springs, d d, said valve being opened at the proper points by the projections, e e, on the inner side of the cylinder, D, substantially as described for the purpose specified.

WASHING MACHINES—V. R. Stewart, of Weedsport, N. Y.: I claim the combination of the corrugated or fluted cylinder, B, and reciprocating board, M, arranged as shown and described for the purpose specified.

TIDAL ALARM BUOY—John Taggart. of Roxbury, Mass. I claim the combination and arrangement of the air tank, D, the stream or current wheel, C, the bell, G', and mechanism, substantially as described, for causing said bell to be sounded during the rotary movements of the wheel, produced by the action of a current in the water, as set forth.

I also claim arranging or combining with the stream wheel, the bell, the striking apparatus and air tank, in manner as set forth, the enclosing or guard frame, A, and the pendulum or weighted lever, B, applied thereto, the same operating together, substantially in the manner as described.

SAFETY HATCHES—W. H. Thompson & E. P. Morgan, of Biddeford, Me.: We claim an elevator having arms or guides attached to the traveling car or platform, either above or below it, together with the sliding or hinged movable doors, which remain stationary when the elevator is not in use, and are opened by the action of the car or suitable attachments to the same as it passes upwards or downwards through the several stories of the building.

CUT-OFF VALVES—Wm. Wright, of Hartford, Conn.: I claim so combining the lifting toe with the lift rod, by means of a supplemental toe or slide bolt. that the arc or curve described by the vibration of the lifting toe, shall effect a lateral movement of the bolt, thereby tripping the valve, as described.

HARVESTERS—C. B. Wagner. of Philadelphia, Pa.: I claim, in combination with the main supporting and driving wheel, D, and the mainframe, A, and its supporting wheel, Q, the tongue frame, B, so united that the motion of one shall not injuriously affect the action of the others, as set forth.

FIRE ARMS—James Warner, of Springfield, Mass.: I claim, first, the combination of the recoil and adjusting pin with the revolving breech, placed in the shield plate in such position that the point shall be in line with the barrel, as described.

Secondly, I claim forming cavities in the battery plate, in such position and of such form as to receive and hold the ball or balls in case of the accidental discharge of any of the chambers not in adjustment with the barrel, as described.

DIVIDING SHOE FOR MOWING MACHINES—Walter A. Wood, of Hoosick Falls, N. Y.: I claim the particular form and construction of a dividing shoe for mowing machines, as described, by means of which the grass on either side of it, is divided and bent over without breaking or crushing, so that the sickle will reach it all, and thus prevent combing or ridging, substantially as set forth.

CUTTING APPARATUS FOR HARVESTERS—C. B. Wagner, of Philadelphia, Pa.: I do not singly claim forming the finger or guard of a harvesting machine with the hollow or depression, c a.

I claim forming the finger or guard having said depression, with an additional depression, b, and so uniting the sickle and sickle bar thereto, as to facilitate and render easy the cutting, substantially in the manner set forth.

SAFETY FLUID CANS—S. E. Winslow, of Philadelphia, Pa.: I claim the conical form of the wire cloth strainer with a small aperture at its apex or side, which may be adapted to the lower part of lamp tops and to cans; and I do hereby disclaim any application of said conical strainer to the caps of a lamp, with an orifice in said cap through which the lamp may be filled.

CUT-OFF VALVE CHECKS—Wm. Wright, of Hartford, Conn.: I claim the arrangement for retarding the descent of the valve, namely, the combination of the bell crank, q r, with the valve on the one part, and the dash pot, or equivalent resisting apparatus, on the other, so coupled and operating that the arm of the crank to which the valve is attached, shall be approaching its greatest throw, thereby checking the rate of descent of the valve by a force compounded of the diminished speed and diminished pressure, as described.

SPRING BOTTOMS—Alvah Foote, of Blandford, Mass.; assignor to himself, Ira Russell, of Dedham, Mass., and A. B. R. Sprague, and Henry Phelps, of Worcester, Mass. I am fully aware that a combination consisting of a suspension spring, a thrust spring and a curved arch spring placed between them, while the two former springs are arranged so that one shall be directly over the other, is not new, and that the some is applied to a bedstead that was patented by Ira Russell, on the 16th Sept, 1851; therefore I do not claim such, but only my improvement thereon, whereby the same when so applied, can be set up or rendered more or less flexible.

I claim with the bedstead and its system of bands, D D E E, and springs, F F, the extension devices or bars, B B, and screws, C C, whereby advantages as stated are attained.

GRAIN DRILLS—Abraham Fravel (assignor to himself and T. D. Lemon) of La Porte: I claim the combination of tooth, F, cutter, F', and lever, G, with shoe, C, guard, D, and tumbler. M, the whole being arranged and operated substantially as shown for the purposes specified.

OPERATING STEAM VALVES—Remy Henry, of Melrose, N. Y., assignor to James Smith of New York City: I do not claim attaching the pistons of a steam cylinder and a pump to one rod and operating the pump by the direct connection; nor do I claim operating the valve of a steam cylinder by the piston.

I claim first giving motion to the steam valves of a steam pump by the alternate action of the steam and pump pistons in the manner described.

Second, the combination of the sleeve, F, the lever, L, the fork, O, and the spring, N, to communicate the requisite movement to the steam valve.

SHIELD TO PROTECT BREAST PINS—John H. Phillips, (assignor to Leigh R. Holmead,) of Washington, D. C: I claim the employment of a shield or plate with one or more lips or lugs, for the purposes specified.

FARM GATE—George Taylor, of Richmond, Ind., assignor to Harrison Ogborn and George W. Stigleman, of Wayne County, Ind.: I am aware that self-acting gates differently constructed but operated by the wheel of the carriage coming in contact with the road levers, F, F, have be ore been employed; such parts, of themselves, I do not claim.

But I claim the combination of a gate, A, with the angular lever, D or D', in such a manner, and so related to each other that the gate shall stand upon a level both when open or closed—these or their equivalents—substantially as set forth.

And I further claim the combination of the cam, J, with the lever, D', or its equivalent, for the purpose of vibrating the levers, D D', thereby opening and closing the gate, substantially as described.

LOOMS—Lucius J. Knowles, of Warren, Mass.: I do not claim the combination of the vibrator, P, and the angular notch o, with either of the levers or jacks, G, of the harnesses, and so as to operate in connection with the lifter rod, I, substantially as before specified, because I am aware that such has been the subject or a portion of the invention for which a patent was granted to Benjamin F. Rice on the 18th day of October, 1853, my invention being in part an improvement thereon and subordinate thereto; nor do I claim for operating the vibrator the mode described in the patent of the said Rice, wherein the pattern chain is represented as having an intermediate rotary motion while at work, and made to move the vibrator by the alternate actions of pins and hooks in a cam groove formed at the upper part of the vibrator, or in an arm projecting above its fulcrum, my improvement enabling the spring arm not only to perform all the functions necessary to move the vibrator, but the additional one, viz., that of allowing the toothed cylinder, M, to be continually revolved, important advantages both in the construction and operation being gained thereby.

What I claim, is the application of the spring, R, to the jack, G, the vibrator, P, and the toothed cylinder, substantially in manner and under their arrangement, as described, in order to enable the cylinder, M, not only to effect the movements of the vibrator by the aid of its spring, but to be continuously rotated or maintained in constant and not in intermittent rotary motion, all substantially as specified.

I also claim combining the double shuttle or drop box, C, with one of the levers or jacks, G, operated as described, by means substantially as explained, viz., the rod, S, the elevator, U, the friction roller, T, and slide bar, V, and so that such drop box may be operated by the toothed cylinder of the harness levers or jacks.

RE-ISSUES.

BELLOWS FOR MUSICAL INSTRUMENTS.—Jeremiah Carhart, of New York City. Patent dated Dec. 28, 1846: I claim the combination of the reeds with an exhaust chamber of variable capacity, and an air pump, whose action exhausts and rarifies the air therein, the exhaust chamber tending to expand with a force that will balance the rarification to be preserved in the chamber, for the purposes set forth.

ANNEALING FURNACE—J. Joseph Eagleton, of New York City. Patent dated May 20th, 1856: I claim charging and discharging an annealing furnace in bulk substantially in the manner and for the purposes set forth.

I also claim opening the bottom of the annealer, for the purpose of discharging its contents and recharging it, as set forth.

I also claim the employment of a continuous heat; with an air-tight annealer, substantially as described, by which iron ware can be annealed with the same facility as brass and copper, where the air is not required to be exhausted.

DESIGNS.

STOVES—S. W. Gibbs of Albany, N. Y., assignor to North, Chase & North, of Philadelphia, Pa.

STOVES—Samuel F. Pratt, of Boston, Mass., assignor to W. & J. Treadwell, Perry, & Norton, of Albany, N. Y.

STOVES—N. S. Vedder and William L. Sanderson, of Troy, N. Y., assignors to North, Chase & North, of Philadelphia, Pa.

COOKING STOVES—Garrettson Smith, Henry Brown & J. A. Read, (assignors to Leibrandt McDowell & Co.) of Philadelphia, Pa.

Lightning and Epidemics.

Lightning and thunder storms have generally been held as great agents of atmospheric purification, and conservators of public health but E. Merriam, the meteorologist and "Weather Clerk," of Brooklyn, has propagated an opposite theory, namely, that a season of great heat attended by lightning, is always more fruitful of disease and death, than periods of equal heat without free atmospheric electricity. This is a question that deserves more attention than it has hitherto received.

Sandstones for Building.

The last number of the *Mining Magazine* contains a paper recently read before the Boston Society of Natural History, by F. Alger, on the above subject. Samples were exhibited of the New Jersey sandstone, of which New York Trinity church is built; also of the Connecticut brown sandstone, which is more generally used than any other; also a new kind from Nova Scotia. The preference was given to the latter. The New Jersey stone was considered next in quality, while the Connecticut stone was held to be inferior to both. The Nova Scotia stone contained no carbonate of lime, and no sulphuret of iron; neither does the Jersey stone, while the Connecticut kind contains both carbonate of lime, mica, and some sulphate of iron. These substances in sandstone detract from its durability and cause the stone to split off in scales, when subjected to excessive heat. A cubic foot of Nova Scotia sandstone weighs 155 pounds; the same bulk of Jersey stone weighs 149 pounds; while the Connecticut stone weighs 157 pounds per cubic foot. The great amount of iron which the latter contains is the cause of its greater weight. All these sandstones belong to the sedimentary group of the old or new Red sandstone, and accompany the coal formations. Many of the fine old buildings in Great Britain are composed of these—such as the famous Abbey of Melrose, the Glasgow Cathedral, &c.; and so durable have they proved to be, that although they have stood since 1142—714 years—the most minute moldings and decorations are yet in perfect condition. All sandstones do not possess the same durable qualities. Some of them soon molder and decay by exposure to the weather. Sandstones containing deep red streaks are not to be depended on, as these marks are evidences of the presence of oxyd of iron, which soon crumbles out. It is true that the face of sandstone can be preserved by paint, but then it is much cheaper to use brick than such stone, and it looks nearly as well in a building. Sandstone of a close, fine, uniform grain should always be selected, and it should always be laid down in a building in the same position its layers occupy in *situ*—that is, horizontally. No stone, marble, or sandstone should ever be laid up in a building with their planes of stratification vertical; and yet we have seen many thus laid. Every person knows, or should know that they cannot when thus laid, stand such a crushing force; they are liable to split down through these planes when superincumbent weight is placed upon them. The edges only of the layers of stones should be exposed to the weather, because if placed otherwise they are more liable to crumble and decay, in climates like ours, where there is much moisture and frost. If a block of sandstone be immersed in a saturated solution of the sulphate of soda for a few hours, then exposed to the atmosphere for a few days, crystalization will take place within the pores of the stone and cause the same disintegration that is produced by frost. This is Dr. Ure's test of the durable character of sandstones; it is one that requires but a very short time to perform, and should not be neglected by those who are engaged in building houses for themselves, or others.

Mercantile Library Association.

We are indebted to S. Hastings Grant, Esq., for a copy of the Twenty-fifth Annual Report of the Mercantile Library Association. Besides the ordinary transactions of the Society, it also contains a brief report of the observations on foreign libraries, made by Mr. Grant during his recent trip to Europe. The library contains 47,000 volumes, and the reading room is supplied regularly with 160 magazines and 120 newspapers in seven different languages.

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[For the Scientific American.]
Electro-Chemical Baths.

Some late criticisms on my Electro-Chemical Baths, on page 299 SCIENTIFIC AMERICAN, by a correspondent, displays so little knowledge of the facts, that I wish to make a few remarks, to correct such errors.

The fundamental principle of my Baths, is simple, and without mystery; but requires, nevertheless, a full knowledge of chemical laws, and considerable practice to successfully and even safely administer them, for, like the scalpel, it is, when in skillful hands, capable of great good, but when badly managed it is extremely dangerous. I have preferred to make its application a public benefit, little thinking, however, that such a course would create enemies, where I had reason to look for friends.

My application of electricity in baths consists in immersing the patient, or sometimes simply the suffering member, in medicated warm water, contained in a tub of pure copper, which communicates with the magnetic pole of a voltaic pile, and by resting the hand of the patient upon a bar of iron covered with wet linen, to which is attached a wire, placing it in communication with the positive pole of the pile. The body of the patient is separated from the copper of the tub by wood, so that when the hand touches the iron, or positive pole, the electric current enters the body by the arm, and causes its whole surface to irradiate. To produce this irradiation, it is necessary that the liquid of the hath should be composed of substances, less in their conductive power than the tissues of the body.

It is easy to conceive that I can, by this arrangement, with judicious compositions, extract positive substances from the body, while on the other hand I can introduce highly electro-negative ones, such as oxygen, iodine. etc.

I do not place the wood in the tub for the purpose of isolating the patient from the copper, but to prevent any portion of the body from touching the metal, for the electricity, in case of contact, would all pass by the one point in contact, and thus deprive the rest of the body of its salutary influence.

I make this remark because several persons in their wisdom, having discovered that the wood, when wet, acts in a measure as a conductor, have substituted glass to more effectually isolate the body, not knowing that by so doing they hinder the radiation from its lower parts.

Some few of the critics pretend to have made the discovery that entire immersion is useless, and that the electricity entering by the arm, immediately leaves the body upon reaching the liquid of the bath, to seek the copper. One endeavors to prove his statement by the following experiment. Without interrupting the communication of the voltaic pile with the tub, he places under the feet of the patient a plate of copper, suspended by a wire covered with gutta percha, which connects with a galvanometer, in communication with the negative pole of the battery, and because the galvanometer does not appear to be much affected, he concludes that no electricity passes. By this arrangement the man of science leaves two passages for the electricity, the strength of the current in each depending upon three things: 1st, the nature of the body. 2nd, the extent of its surface; and, 3rd, the length of the current. In considering the surface of the plate of copper, in comparison with that of the tub, it requires no great intelligence to perceive that the galvanometer should be exceedingly sensitive to appreciate the current passing through it from the copper plate.

The nature of the bodies being the same, suppose, a, to be the surface of the plate, and B the surface of the tub, then, as bodies conducting electricity are to each other as the square of their dimensions, it follows that the current passing through the galvanometer, is to that passing by the tub, as a is to B. Let L represent the length of the wire attached to the galvanometer, and suppose l to mark the length of the current which passes from the tub to the battery; then the inverse ratio of the two currents is as l to L, which makes the ratio of the two currents $= \frac{a \times l.}{B \times L}$ Suppose, now, that $a=1$, B=500, which is within bounds, and that $l=10$ feet, while L, taking into consideration the coil of the galvanometer=60 feet, we then have for a numerical ratio $\frac{l \times 10}{500 \times 60} = \frac{1}{3000}$ from which we see that the current passing through the galvanometer, is 1+3000 of that passing from the tub to the pile, thus requiring a very delicate instrument to perceive its action.

I will not trespass further upon your colnmns, by exposing other absurdities of these gentlemen, for their statements are so incorrect that the public will now easily perceive this. I will therefore only describe an experiment, which may easily be tried, and which proves that when electricity traverses a liquid body, it does not polarize, but reaches every part of it.

Fill a copper vase with a solution composed of nitrate of silver, cyanide of potash, and of carbonate of soda; attach the vase to the negative pole of a voltaic pile, then touch the liquid with the positive pole, and it will have the effect of instantly covering the entire interior surface of the vase, with a layer of silver. V.

[We have also received a communication from O. H. Wellington, M. D., of the Water Cure Establishment, No. 32 East Twelfth street, confirming the views of Professor Vergnes, and endorsing the effective action of electricity in expelling injurious substances like mercury from the human system, by the "Electro Chemical Baths."

Notes on Patented Inventions.—No. 12.

India Rubber Manufactures, (*Concluded.*)—Four patents were secured in 1850 for improvements connected with india rubber manufactures; two in March—one to F. D. Hayward and J. C. Bickford, of Connecticut, consisting of a combined method of spreading india rubber on cloth by pressure rollers, and grinding and fixing it, at the same time. And on the same date, John Pridham, assignor of H. H. Day, was granted a patent for combining india rubber with an oxyd of tin and sulphur, which, when submitted to a high heat, produced a fabric having a fine black surface. In April following, Fowler M. Ray, of New York, obtained a patent for making india rubber car springs in a peculiar manner. In December, Jonathan T. Trotter, of New York, received one for producing vulcanized india rubber without the use of free sulphur, by using the hypo-sulphite of zinc as a substitute.

In January, 1851, Jonathan T. Trotter secured another patent for another combination of zinc with india rubber, to obviate the use of free sulphur. In connection with these two patents, it must not be forgotten that sulphate of zinc was employed in combination with india rubber before sulphur was employed.

David McCurdy, of Newark, N. J., secured a patent in March for combining potash with sulphur and india rubber. Nelson Goodyear was granted one in May, for rendering vulcanized india rubber very hard, by combining it with shellac, or with lime, or a carbonate, or a sulphate of magnesia. The product is a strong, hard, and inflexible india rubber compound, of which a great variety of articles resembling horn, are now made.

In 1853, Richard Solis, of New Brunswick, N. J., secured a patent in February for a mixture of vulcanized metallic india rubber, with native india rubber in equal parts; the fabrics made from this were dried in the sun. In February, H. L. Morris obtained a patent for preserving the native caoutchouc juice, as it comes from the tree in a liquid state for any length of time, in air-tight bottles, by mixing with every pound of it one ounce of liquid ammonia; this patent was assigned to S. T. Armstrong, of New York. On April 12th, Charles Goodyear secured a patent for the use of powdered soapstone or other like granular adhesive substance, to cover the surface of india rubber molded articles that were to be submitted to a heat of from 200 to 300° Fah. The object of the soapstone was to preserve the form of the articles while being vulcanized. In September, John Chilcott and Robt. Snell, of Brooklyn, N. Y., were granted a patent for a superior method of securing the india rubber soles of boots and shoes. On October 11, Charles Goodyear was granted a patent for coating metals with india rubber or gutta percha. The rubber or gutta percha was mixed with about eight ounces of sulphur for each pound, then pressed on the surface of the metal, and afterwards subjected to a heat of 260° for seven hours.

On the 28th February, 1854, L. O. P. Meyer, of Newton, Conn., was granted a patent embracing the vulcanizing of what is called *hard* vulcanized caoutchouc or other gum. by immersing it in a hot liquor of 300° Fah. during the process of curing. In April following he secured another patent for covering the embossed surfaces of *hard* india rubber, with tin foil, during the curing process, to preserve its form. On the same day a patent was granted Charles Goodyear for covering the surfaces of india rubber fabrics with sheets of paper or cloth, and placing them between plates of metal during the curing or heating process, to protect their surfaces. On the week prior to the granting of the two preceding patents, one was obtained by E. D. S. Goodyear for partially filling india rubber balls with water, which water, during the process of vulcanization is converted into steam, and exerts an interior pressure to give the hollow elastic article its desired form. In August following Daniel Hayward obtained a patent for remolding worn-out india rubber goods, by the use of a steam jacket surrounding the molds or dies. On Nov. 7, E. E. Marcy was granted a patent for the use of selenium, as a substitute for sulphur in curing india rubber. On the same day Wm. E. Rider and John Murphy obtained a patent for the use of hydrogen gas in the curing oven, to remove superfluous sulphur from india rubber goods. On the succeeding week a patent was obtained by Julius A. Pease, for making india rubber overshoes with an inner ribbed and corrugated surface, to allow of a circulation of air between the boot and the overshoe.

On the 2nd January, 1855, H. T. Tuyre and John Helm, secured a patent for a peculiar mode of preparing india rubber shoes and on the 30th following they obtained another patent for making elastic india rubber cloth without cement, and without threads, to supersede the shirred india rubber goods.

On the 24th of May, 1855, Sigismund Beer, of New York, was granted a patent for a very important discovery in the india rubber art, namely, the restoration of vulcanized india rubber, so that old goods could be used over and over again, like paper. He extracted the sulphur by the use of potash lye and oil, and then submitted the mass to the action of turpentine or any like solvent. This was a discovery long sought after, before it was made.

In the foregoing brief history of india rubber manufactures, our readers will no doubt be somewhat surprised at the great number of patents secured, and some of these so similar in their nature. Some are of great importance, others of minor consequence apparently. The manufacture of india rubber goods, we understand has been very profitable in most cases. The name of Charles Goodyear, appears most frequent in the list of patentees. He has recently been residing in France, and has taken out a great number of patents in that country and England, for the application of vulcanized india rubber to the manufacture of various articles. In England and France a more liberal policy is pursued, in granting such patents, than that which characterizes our Patent Office; and such patents are also well sustained at law, and no doubt would be by our U. S. Courts.

Mr. Goodyear has lately secured a patent in England for ventilating india rubber overshoes, by making them with corrugations perforated with holes. His new patent is simply an appropriation of the main feature of J. A. Pease's patent, with the addition of making holes through the corrugations. A beautiful hard india rubber can be manufactured by mixing calcined ground oyster shells with india rubber and sulphur. It is adapted to the manufacture of bobbins, rollers, &c. Lampblack is the coloring material for the black horn-like combs, ebony pencil cases, canes, &c. A greater variety of articles are now made of india rubber compounds than from any other plastic compounds. It possesses a plastic quality which enables it to be molded into any form; it is air and water tight, and very elastic—admirable qualities. Coats and combs, balls and buttons, canes and corks, pencil cases, penknife handles, sword sheaths, rollers, tubes, and tunics, dolls of dogs, donkeys, and dwarfs, shoes, gloves, and cloths of wonderful diversities, and an indescribable number of other manufactures. We do not suppose, for a moment, that the climax of improvements in india rubber manufactures has been reached; it will yet be applied to objects not now thought of, and as many difficulties have attended the production of cast and wrought iron instruments of war, perhaps the next great feat of gum elastic application will be *an india rubber gun.*

A Shoeing Stool for Blacksmiths.

MESSRS. EDITORS.—The following is a description of a stool for blacksmiths for shoeing horses, which I have invented and found to be very convenient and useful, and I present it for the benefit of the craft.

I make a light portable stool of the form of a common crutch with one leg, and put a cushion on the seat. To this is secured a strap, which passes around above the hips, and is buckled tight in front. The seat of the stool is about four inches thick, and is held to its place in the leg by an iron spur. The blacksmith puts it on behind and between his thighs and buckles it in front, and the horse's foot is placed on the seat; it thus supports the weight of the animal's leg, and relieves the back of the shoer from that severe strain which makes horse-shoeing such hard work. B. B.

New Russia, N. Y.

[This device of our correspondent is certainly very simple, useful, and worthy of extensive adoption.

A Wonderful Discovery.

A resident of Union Grove, Illinois, writes the following interesting fact, in a recent letter to the office of the Cooperstown, N. Y., *Journal:*

"One of my neighbors dug a well last fall, on elevated ground. After going down 27 feet, he came to a brush of willows; he dug four feet more and then struck the top of *another well;* which was stoned with cut stone, laid in cement, and in which there was a bountiful supply of water. Who dug that well?"

MESSRS. EDITORS—Must this pass off with the Moon Hoax of by-gone days? or is this the Land of Nod, in which Cain, going out from the presence of the Lord, settled; and, consequently these deep-buried wells are of antediluvian origin: if so, we fear the spirits of the giants are being revived these latter days, and hence the land is "filled with violence." J. C. ROGERS.

Grand Rapids, Mich., June 1, 1856.

We frequently see such paragraphs as the above, but presume they are manufactured for other purposes than "to point a moral or adorn a tale."

The Pressure of the Atmosphere.

The barometer, it has been recently discovered, rises and falls twice every day regularly. It falls lowest at 45 minutes past 3 o'clock, A. M., and at 5 minutes past 4 A. M. It rises to its greatest hight at 37 minutes past 9 A. M., and at 11 minutes past 11, P. M. The cause of these barometrical oscillations, has not yet been discovered.

A Great Strike Ended.

A few weeks since, we noticed that 40,000 coalminers in Scotland, had struck for higher wages; which had been refused by the coal masters. The last news from England gives an account of the close of that strike, and are unfavorable, as we predicted, to the operatives. General strikes for wages, always end in evil to the workmen.

Fruit jellies may be preserved from mouldiness, by covering the surface one-fourth of an inch deep with finely pulverized loaf sugar. Thus protected, they will keep in good condition for years.

Great Submarine Cable.

The second submarine cable to unite New Foundland with Nova Scotia—telegraphically—has arrived at Halifax, from London, and will soon be laid down. We hope it will meet with better luck than its predecessor.

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New Inventions.

A New Field for Inventors.—The East Indies Thrown Open.

The vast British territorial possessions in India, which have heretofore been closed to Americans, so far as patents were concerned, are, by a New Patent Bill, lately promulgated, now thrown open to the world. British subjects and foreigners are treated alike. Patents are granted to all applicants, irrespective of nationality, on very moderate terms.

The New Law provides that the applicant shall file a petition and specification, as in this country. The Governor General then refers the papers to some person appointed by him, for inquiry and report. (The purport of this inquiry and report is not stated, but we presume it is for examination as to novelty.) The applicant pays the referee a reasonable fee, and then the Governor issues the patent for fourteen years. He may afterwards extend it for another term of fourteen years, if he thinks proper. Beyond the fee of the referee no charge is made, save a few small sums for copying, signatures, seales, &c. Five copies of the specification are, however, required from the applicant.

Nothing is said about drawings. No model is required. The individual who first introduces an invention into India may apply for and obtain a patent. It is not necessary that he should be the inventor. Judicial functions are given to certain courts to try cases of infringement.

The editor of *Newton's London Journal* says:

"The law, which has just been promulgated, opens, for the first time, to the British and foreign inventor, on equal terms, the vast field of India, containing upwards of 100,000,000 of souls. The value to patentees of this concession of the Local Government can hardly be over-rated, if we may infer from the success of the East Indian railways and telegraphs, that a desire exists in the native population to avail themselves of the improvements of the West. Where nature is so prolific, and the people are so industrious and skillful, we see no reason why inventions, adapted to the country, should not find a more rapid and extended success than in any country in Europe. It will be seen that the spirit of the English law is preserved, but the government tax is materially less; and there are some admirable provisions in relation to actions for the infringement of patents. Singularly enough, a provision defining what shall not be admissible in evidence, as an answer to any action for infringement, is almost the echo of a suggestion contained in the last Report of the United States Commissioner of Patents."

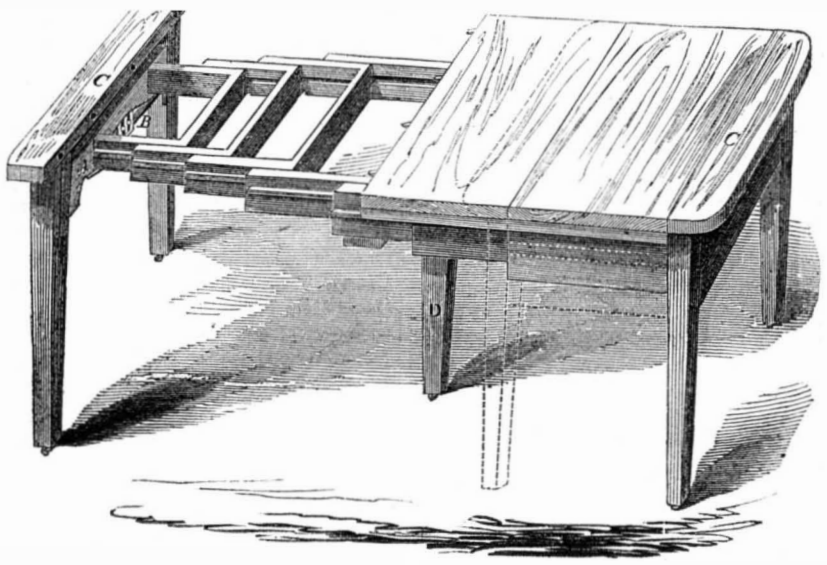
For the information of our readers and their friends, we would state that we are already prepared to take out East Indian Patents with promptness. Our arrangements for securing foreign patents in every country where patent laws exist, are thorough and complete.

American Marble.

Our country is rich in the finest marble for sculpture and architecture. It abounds in almost every State, and when timber becomes scarcer, it will be more extensively used. In the rural districts, in romantic spots, where now only frame cottages "on the wood crowned hights are seen," there will yet arise elegant marble structures, graceful in their proportions, and capable of with standing the storms of ages. "The Marble Worker's Manual,"—the new book noticed by us last week—contains much useful information regarding the qualities and peculiarities of different marbles. Such knowledge should not be overlooked by workmen, architects, and builders, because there is just as much difference in the quality of marble, as it relates to beauty, strength, and durability, as there is in different kinds of wood. At West Rutland, Vt., marble is obtained which has no superior for sculpture in the world, and some of it has been exported to Rome, ordered by Italian sculptors. It has a fine grain and works beautifully under the chisel. At great Barrington, Mass., there is a flexible marble, which bends like a bow when wet. Black marble, equal to that of Ireland, is found in New York. The verd antique is found in many districts, and in every State in almost every variety. It is rather remarkable, however, that although we have so many beautiful native marbles, that most of that employed for interior decoration is imported from Italy, because of its cheapness,—not on account of its better quality. The author of the "Marble Worker's Manual" directs attention to this fact, and points out the remedy. He states that when capital and the inventive arts are more directed to the business of getting out and manufacturing marble, to send abroad for it will be as absurd as imitating our fathers, in bringing tomb stones ready made from Wales and bricks from Holland.

It only wants a proper stimulus and attention to bring out great improvements in quarrying marble, like that which recently (through suggestions and a prize offered through our columns,) led so rapidly to such a number of new inventions in machinery for sawing marble.

IMPROVED EXTENSION TABLE.



Improved Extension Table.

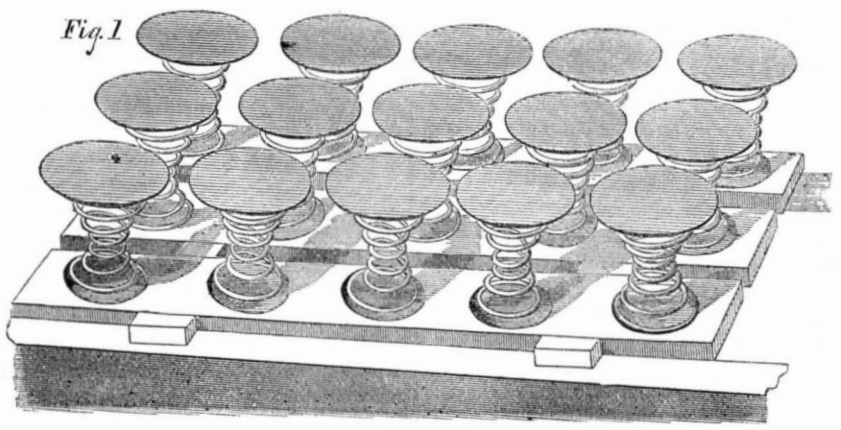
The ordinary extension table consists of a nest of frames made to slide one inside the other when compacted, but capable of being extended so as to receive additional leaves when a larger table is wanted. The extra leaves are separate articles of furniture, and when not in use are generally stowed away out of sight. When the table is to be shortened, the leaves must be taken off and conveyed to their closet; to elongate the table they must be again brought back. In families, hotels, on steamboats, etc., this repeated running to and fro with the table leaves is a great inconvenience.

The improvement herewith illustrated is so made that the extra leaves are all packed within the table itself, and this is done by an arrangement of parts at once simple and convenient. The frame of the table is made in nests in the ordinary manner, but the cross pieces, A, at each end, instead of being permanent, are made to slide up and down between guides. B is a spring, which acts against the cross pieces, A, and lifts them.—In order to compact the table the leaves are placed one upon the other, in a pile, and then pressed down, nest frames and all, until the upper leaf comes even with the surface of the fixed edge pieces, C; the pins on the upper leaf then enter the holes in edge pieces, and a flush surface is formed. When desirable, the leaves may be placed in double piles as shown in our engraving. D is an adjustable leg.

This improvement is applicable to the common tables in use. The expense of original construction is no greater than that of ordinary extension tables, notwithstanding its superior advantages.

Mr. E. A. Curley, South Egremont, Mass., is the inventor, who will give further information. Patented January 15th, 1856.

IMPROVEMENT IN SPRING BEDS.



Improved Spring Mattrass.

Metallic springs are fast taking the place of hair and other materials, in the formation of mattrasses. Improvement after improvement has been made, until now we may obtain beds and couches, of luxurious softness, the principal components of which are metal.

Our engraving shows the invention of Mr. Wendell Wright, of New York City. Spiral springs are used, each arranged separately, their tops mounted with flat wooden disks, their bases resting in sockets in a wooden cross frame.

The common method is to bind the springs together, but in this improvement they are separated and act independently. This permits their convenient removal for cleansing and purifying purposes. A thin bed of hair or other substance is laid upon the tops of the disks.

The springs are self-fastening in their attachment to the disks and frame. The sockets of the disks and frame are shelving or grooved in form. The springs spread into the grooves and are thus held with such a force that although no other fastening is employed, they cannot get out of place.

The advantages of metal over other substances in neatness, durability, and the avoidance of vermin, are well known. This improvement, by its simplicity, greatly reduces the cost of manufacture. We have had one of these spring beds in use for some time past, and therefore speak from personal experience when we say that it is the best we have ever used, and we have tried many other kinds. Nothing can be more soft or comfortable. Messrs. Lippincott & Co., No. 1180 Broadway, N. Y,, are the makers of these improved beds, and of them further information may be obtained.

Pat nted Dec. 10, 1854.

A New Life Raft.

A new and peculiar life raft, passed through our city last week, on its way to Philadelphia for a Ferry Co. in that city. Its appearance attracted quite a crowd of curious inquirers, as it was stopped in front of our office, by the inventor—W. B. Davis, of Brooklyn, for us to examine. It consists of two sides, composed of longitudinal layers of rattan covered with water-proof canvas, and so united as to form an eliptical boat, resembling two tubes with a space between them netted with rope matting. It is 18 feet long, weighs 300 lbs., and possessed a buoyancy of 700 pounds. It is adapted to be thrown from the deck of a boat, to answer the purpose of a large life-preserver. Its cost is but small, and it is elastic and strong.

Patent Fees.

During the last week we paid into the U S. Treasury, to the credit of the Patent Office the sum of two thousand two hundred dollars. This is doubtless a larger sum than the Commissioner received, during the same time, from all other sources combined. Paradoxical as it may seem, it is a fact that the United States Patent Office receives nearly one-third its entire revenue from the Scientific American Patent Agency.

Chemical Analyses in the Patent Office.

Dr. C. T. Jackson, of Boston, has been engaged by the Agricultural Department of the Patent Office, to travel through the country and make chemical analyses of various kinds, with a view to determining the amount of nutriment in different kinds of grain—the amount of tannin contained in the barks and other materials used by tanners—the determination of the amount of phosphoric acid in the soils on the sea-board, supposed to be exhausted, as compared with the virgin soils of the West, and other matters connected with soils. He will analyze the cotton plant—sea island and upland, also the soils in which they are grown; also various grasses and the soils best adapted to their cultivation.

Notice.—Erratum.

The date over the List of Claims, in our last number, should have been *June 18th*, instead of the 11*th*. The error occurred from neglecting to change the date over the list of the preceding week.

Straw Paper.

We have received some samples of paper made of straw, at Rock City Mills, Saratoga Co., N. Y., by C. Kilmer, which we really think is the best quality of straw paper we ever saw. It is very free from hard, yellow specks, so common in straw paper, has not that harsh, hard feel, so common to such paper; and it is well-bleached—being a good white.

Shola.

This is a singular substance manufactured in India from the cellular pith stems of a plant. It resembles Chinese rice-paper in appearance, and is manufactured by the natives into life-buoys, boxes, bottle-cases, hats, and many other articles. Owing to its extreme lightness it is admirably adapted for hats worn in hot climates.

Egyptian Alabaster.

The Egyptian Government having, of late years, opened up some rich quarries of Oriental alabaster, great quantities are now being sent to Italy for the purpose of making vases. The color of this alabaster is very beautiful, and it is very translucent.

Soda Water.

This is a name generally applied to a common effervescing beverage, but it is incorrect. The effervescent quality is not due to soda, and that substance is not present at all in the water publicly sold by that name. The effervescence is produced by carbonic acid gas, and is forced into the water by an apparatus. The gas is produced by pouring sulphuric acid upon marble dust, or upon the super-carbonate of soda.

Some barrels of Flour from this year's crop of Georgia Wheat, was sold last week in New York market, for $10·50 per barrel.

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Scientific American.

NEW-YORK, JULY 5, 1856.

The Weather and its Signs.

There is no subject of more importance, and yet there is none with which men of science, and others, are so superficially acquainted, as that indicated in the above caption.

The heat of summer and the cold of winter, the rain and the snow, the thunder and the lightning, the hurricane and the gentle breeze, how many mingled associations of pleasure and grief are connected with these. Our enjoyments, yea, our very existence, it may be said, are dependent on those operations of nature, which we call *the weather*.

Sometimes, as in 1854, the clouds will refuse their refreshing showers for a long period, and over extensive tracts of country the grass withers, and the corn and wheat fields become parched and barren: the lowing kine perish for want of the water-brooks, and then famine comes and desolates many once-happy homes. Sometimes, again, the clouds will pour down their torrents for long periods, and the floods will come and sweep resistless over broad lands, carrying the crops of the farmer from his fields, and his flocks from the vales. Again, the hurricane will sometimes come on swift wing, bearing destruction in its pathway; and, if accompanied with red bolts of lightning, may consume well filled barns and storehouses, and level many beautiful dwellings to ashes. Were those weather changes governed by immutable laws, and were we well acquainted with these, we might adopt special means to meet special ends, and provide against the coming drouth, the floods, and the hurricane. Hitherto the weather has been considered fickle as the human temper, and if it is governed by fixed laws, the whole world lieth nearly in gross darkness respecting them. The sky may be cloudless to-day, and to-morrow, yea, in a few hours, the lightning and the tempest may come, and no man living, so far as we know, can predict the event with certainty.

The astronomer has watched the motions of the distant planets, has weighed them in a balance, and can tell the exact period when the moon, after a long interval, will hide the sun's rays from the earth by day; and also when the eccentric comet, after long journeys in unseen regions of space, will revisit our system again,—but he cannot positively tell the particular atmospheric changes that will occur to-morrow in the city where he dwells; and yet a correct knowledge of coming atmospheric changes would be most useful to all men.

Can such information ever be obtained? Not unless such phenomena are governed by fixed laws. Well, when we consider that the planets roll, and the tides flow, by immutable decrees, can any person doubt that the weather is governed by fixed laws? That such laws do exist, no one in his senses can doubt, and that they will yet be discovered, we have as little doubt, and it is a shame that so little has been done to discover them. We are glad, however, that something has been done, and there is a promise of something more. Various stations have lately been established in our own country for taking meteorological observations, and all the leading nations of Europe have also entered upon the same course of investigations. Such observations extending over various parts of the globe, and for a number of years continuously, will no doubt lead to astonishing results. Already, by private enterprise and keen observation, Prof. Espy and Mr. W. C. Redfield, of this city, have made valuable discoveries relating to gales and hurricanes, and the latter has laid down some practical rules for navigators, regarding the rotary progressive course of tornadoes, which have proven to be of great benefit, by teaching seamen how to withdraw from their power. The spots observed on the sun's disk, take place at regular intervals, and these, Sir Wm. Herschel asserts, affect the weather, on our globe, to such a degree, as to regulate the very price of wheat. Lieut. Maury has done much to reduce the weather changes on the ocean to a science. It is believed by Humboldt and other eminent philosophers, that the sun is the source of magnetism as well as heat, and that the vibrations of the magnet are to our globe, as the beating of the pulse to the human system.

In an article in the last number of the *North British Review*, believed to be written by Sir David Brewster, he says, "Had Hipparchus and Ptolemy made hourly observations, and had they also been made by their cotemporaries and successors in different parts of the world, we might now be predicting the weather with as much certainty as we do the planetary motions." The great number of meteorological observations now being made in various parts of the world, inspire us with hope that such a result will yet be accomplished. We hail every effort that is made to reduce "the weather and its changes" to a positive science, because, as we have already stated, such knowledge will be most useful and important to all men.

The Hughes Printing Telegraph.

"[1.] This wonderful invention, which is destined to effect a complete revolution in the Telegraph business, is now being subjected to the severest test at Boston, upon a wire upwards of five hundred miles long, and is found to realize the most sanguine expectations of the inventor and the owners of the Patent. [2.] There is found to be no practical difficulty whatever in working the instruments in perfect unison in a circuit of five hundred miles, and there is no reason to doubt but that they will work with complete success through a circuit of one or two thousand miles. [3.] Nor is there found to be the least difficulty in transmitting messages from opposite ends of the wire at the same instant of time—[4.] the two operators being thus enabled to exchange about twenty to twenty-five hundred letters per hour.

[5.] The mechanism of the Hughes machines is extremely simple, and can be manufactured for about $100 each. Mr. Phelps, of Troy, the ingénious gentleman who has charge of the invention, has, however, since seeing the machines working in a long circuit, projected several important improvements, by which, without detracting anything from the efficiency of the instruments, they can be considerably simplified and cheapened. Any child who can read will be able at one hour's practice to transmit messages with perfect accuracy, and at a fair rate of speed. We understand that the American Telegraph Company, who own the Hughes Patent, have decided to have the style of the instruments improved in accordance with the suggestions of their machinist, which will cause a delay of a very few days in introducing the invention to the public."

We copy the above from the *New York Times*. The same statement, word for word, appeared the same day in the *New York Tribune*. We have had occasion, heretofore, to comment upon errors put in circulation in regard to "this wonderful invention." We have now to make a few more inquiries.

[1.] What is the nature of this "severest test?" Where is the wire, 500 miles long, located? Is it under cover in a dry apartment? Or is it stretched on poles, like other Telegraph lines?

[2.] The successful working of a Telegraph instrument on a circuit of 500 miles, is no proof that it will operate well on a circuit of one or two thousand miles. Experience proves that beyond a maximum of 800 miles, difficulties are always encountered which augment with an increased length of the circuit. What is it that exempts Hughes' invention from the difficulties common to other electrical telegraphs?

[3.] It is an utter impossibility to send two messages, in contrary directions, over the same wire, at the same instant of time. As well might it be expected to send two streams of water, in adverse directions, through the same pipe, both at the same time. What is the object of such incorrect statements? A similar publication was made, not long ago, but we took it for granted that the meaning intended to be conveyed was that, *during the interval* elapsing between the striking of letters or signals sent in one direction, signals could be sent in a contrary direction. This is a well-known system, and was long since practically realized—probably before Hughes' invention was thought of. We repeat, two messages cannot be sent over the same wire, in different directions, *at the same instant of time.*

[4.] Does this mean that the combined labors of both operators results in the sending of 2,000 to 2,500 letters per hour? Or does it mean that each individual sends that number of letters?—making an aggregate for the two operators of 4,000 to 5,000 letters? We suppose the latter. This combined speed is less than that practiced by single operators on the Morse lines, for they send 6,000 letters per hour.

In several previous statements, it has been alleged that each operator, with the Hughes' instrument, could send from 20,000 to 25,000 letters per hour. Has the late practical trial caused a reduction of speed from thousands down to hundreds?

[5.] Here it is stated that the instrument is extremely simple and cheap, costing only $100, but that since the trial, Mr. Phelps has ascertained that they can still be considerably simplified. What will be the cost of the instruments that will be considerably simpler than those extremely simple machines, which cost only $100?

So far as we can judge, from the interested reports that have been issued, Hughes' Telegraph has proved defective, in one way or another, at every trial. Notwithstanding these facts, it is still proclaimed as a "wonderful invention;" "destined to effect a complete revolution," in Telegraph matters. We hope no one will be led to sacrifice their interests or lessen their confidence in Morse's, House's, and other Telegraphs, in consequence of the puffs that are so often appearing in our daily prints of this machine.

Recent American Patents.

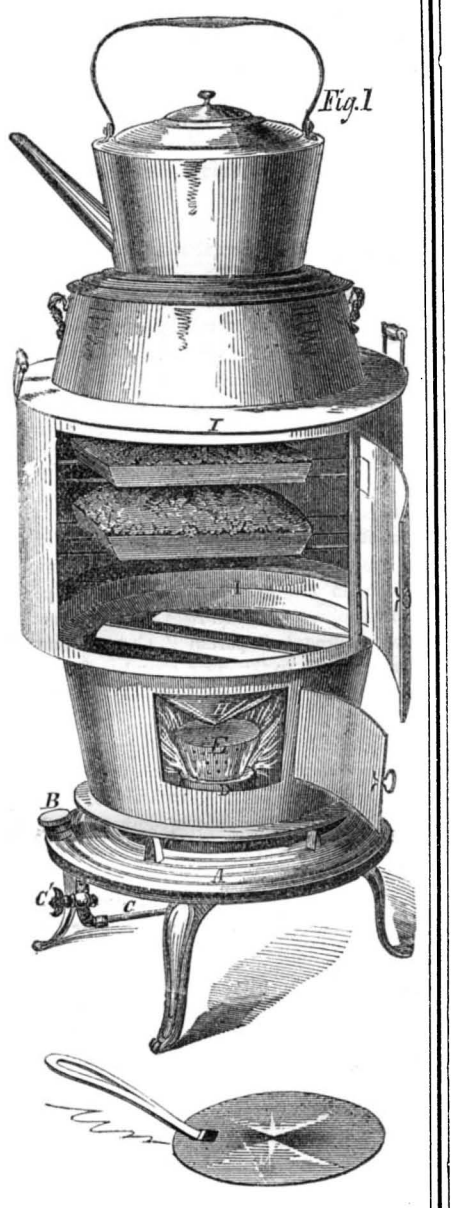
Improved Carriage Clip.—By William Cox, of Doylestown, Pa.—The irons on the shafts instead of being made of single pieces, with an eye for the admission of the clip bolt, are made in two parts, hooked shaped, and when put together they clasp the bolt, thus making a connection. One of the parts is elastic. They are fastened together by means of a screw, by loosening which the shafts may be detached from the carriage. This improvement prevents rattling, avoids wear, &c.

Improvement in Harvesters.—By Owen Dorsey, of Triadelphia, Md.—Consists in a peculiar method of operating the cutters, so that they receive twice as many vibrations at every turn of the driving wheels, as the cutters of the common machines. This invention, together with other improvements, embracing a novel and ingenious method of operating a series of rakes, so as to sweep off the cut grain from the machine to the ground, and leave it in regular piles, convenient for the binder, previously patented, were fully illustrated and described a short time since in our paper—No. 39, present volume. The invention is, apparently, one of value

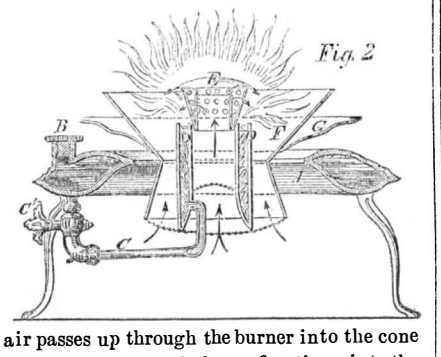
Implement for Cutting Down Trees.—By G. C. Ehrsam, of New York City.—Consists in giving a rotating motion around the body or trunk of the tree, to a cutting blade; also, in giving to the blade a feed motion into the tree, by means of an annular rack or toothed rim, and a spiral thread. The rack or toothed rim is attached to a collar, which is fitted around the trunk of the tree, the screw thread being cut on the upper edge of the collar, and fitting in or between corresponding threads on the under side of the chisel or cutter. Power being applied the cutter revolves around the tree, and cuts inward, until the trunk is severed. This is a novel invention.

Improved Vise.—Horace B. Chaffee, of New York City.—Consists in having a supplementary jaw pivoted to the stationary jaw of the vise, the lower end of the supplementary jaw being connected by a rod with a weighted pawl. The arrangement is such that the pawl is made to catch into a rack which is attached to the lower end of the movable jaw. When the jaws come in contact with the article which is to be clamped between them, the pawl serves as a self-acting stop to the rack and enables the movable jaw to be secured firmly up against the article, without requiring the insertion or alteration of pins, as in the common vise.

Cooking with Alcohol.—By W. J. Demorest 375 Broadway, N. Y.—A few days since the inventor called at our office, bringing under his arm a small apparatus like that shown in our engraving. Within, on the wires, were a couple pans of genuine dough. Having placed the thing on the floor, he lighted the alcohol, and closed the doors. In a very short time the apparatus became hot, and in twenty minutes from the commencement we took out a loaf of thoroughly baked bread and a dish of excellent biscuits. The fuel used was alcohol, and the value consumed two cents.



The construction is such as to insure a great economy of the heat. The alcohol is contained in the hollow ring reservoir, A, being introduced through an aperture at B, which is covered with wire gauze to prevent accident. C is a pipe which conducts the fluid to the burner, D, (fig. 2.) The burner is made simply of two tubes placed one within the other, and sealed at the bottom, the space between them being filled with fine pebbles which serve to conduct and spread the alcohol. E is a hollow perforated cone placed above the burner, so as to deflect the flame, as shown. Cold



air passes up through the burner into the cone and escapes, through the perforations, into the flame, thus increasing the supply of oxygen, causing most perfect combustion, and augmenting the intensity of the heat. F G are reflectors, which throw the heat upwards into the oven and increase the temperature in that direction, while they keep the alcohol holder,

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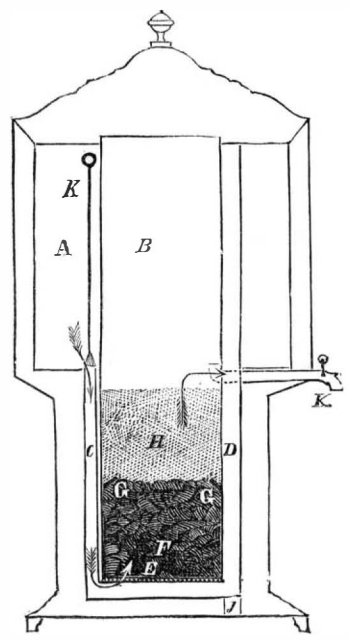
A, perfectly cool. There is a space left between the ring, A, and burner, D, through which cool air always circulates; ring A, therefore, never becomes warmed.

H is a deflector which spreads the heat as it ascends into the baker, I. All the parts above the flame and cone, E, are made of tin, and can be removed or changed for other cooking utensils, when desired. Beefsteak and meat of all kinds may be quickly broiled, and in the very best manner. The article to be broiled is brought in direct contact with the flame, and the results are said to be far superior to those obtained with other fuel. Various operations, such as baking, boiling, heating flat-irons, &c., may be done at once.

This is a very excellent practical invention. It reduces the art of cooking to a very simple business, divests it of all nuisances, saves much time, greatly lessens labor, creates no smoke soot, dirt, or ashes, requires no previous preparation of fuel. It may be used anywhere, in any apartment, out doors or in. It needs no stove pipe or chimney, and is always ready for use.

The peculiar mode of economising the heat and perfecting the combustion, renders the use of alcohol, even at its present high prices, a comparetively cheap fuel. This apparatus sells for $7·50 and upwards, according to size. When desirable, the ordinary illuminating gas used in cities, may be used instead of alcohol, with the same advantages. Apply as above for further information. Patent applied for.

Improved Water Filter and Cooler.—By C. Warner, of New York City.—The outline of our engraving will give an idea of the external form of this improvement. The shell is made double. The water to be filtered is placed in the chamber, A, whence it passes down tube, *c*, and then rises in direction of the arrow through diaphram E, charcoal dust, F, and sand, H, to the inner chamber, B. In its rise through the charcoal and sand, the water is thoroughly purified. From B the pure liquid is drawn off through faucet K. G are flanches to prevent the charcoal from rising, in consequence of the smoothness of the sides of the vessel. The superincumbent sand, H, aided by flanches, G, keeps the charcoal always down in proper place. J is a plug, by opening which the water in chamber B may be drawn off, and by its downward or reverse movement made to cleanse the sand and charcoal of their impurities. During this cleansing operation the plug, K, should be shoved firmly into the mouth of *c*, so as to prevent the passage of water from A.



This invention is adapted to the filtering of water on a large as well as a small scale. It may be made in the form of a cistern, and sunk in the ground. In such cases the water from the eaves spouts is conducted to chamber A, and is raised by a pump from chamber B. The filter is cleansed by the application of a pump to the upper end of the tube, D. The water in B will thus be drawn down through the filtering materials, bringing away the impurities and discharging them through D.

This invention appears to be admirable for the purpose intended, and will, no doubt, come into extensive use. Patented June 3d, 1856. For further information apply to the inventor at No. 7 Beekman st., New York City.

Improvement in Oil Lamps.—By Nicholas Linden, of Jersey City, N. J.—Relates to what are known as fountain lamps, or those that are provided with a reservoir for holding the oil; the reservoir being connected with the wick by a tube. The common lamps are very inconvenient to fill, cause a waste of oil by dripping, create dirt, &c. The present invention consists in a peculiar construction of parts, whereby the oil is conveniently introduced without removing the reservoir cup, and a regular supply of oil to the wick is at the same time insured.

Improved Washing Machine.—By V.R. Stewart, of Weedsport, N. Y.—Consists in the employment of a corrugated cylinder combined with a curved reciprocating corrugated board. The clothes are introduced between the cylinder and board and rubbed most thoroughly.

Cooler for Beer Casks and other vessels.—By F. Espenschade, of Williamsport, Penn.—Consists in a cooler peculiarly constructed. provided with a pump, and connected with the barrel, so that liquids may be drawn from the barrel in a cool state without admitting air into the barrel. The liquid passes from the barrel into a chamber surrounded by ice, and is thence drawn out.

Machine for making Elastic Hay Rake Teeth—By Charles R. Soule, of Fairfield, Vt.—Consists in a peculiar arrangement of a roller. and other parts, for bending the wire into proper shape. The work is done with great expedition and perfection.

Recent Foreign Inventions.

Hardening Fatty and Oily Bodies.—R. A. Tilghmann, of London, has secured a patent for hardening oil and fatty bodies, by subjecting them to the action of a small portion of sulphur or phosphorus at a high temperature. This appears to be a useful invention in the manufacture of candles.

Vegetable Charcoal Prepared for Sugar Refineries.—J. Stenhouse, of London, has obtained a patent for rendering good wood charcoal suitable for decolorizing in sugar refineries. The charcoal is steeped for a short time in a solution of the oxyd of iron, clay, and superphosphate of lime. It is then dried and heated to a red heat in close vessels such as retorts, until the water and acid are expelled.

Extracting Coloring Matter from Lichens.—The most beautiful light shades of purple dyed on silk, are produced from archil on the extract of lichens. Archil used to be manufactured by steeping the lichens in urine, or a liquor of ammonia. A few years since M. Robiquet, of Paris, France, improved the process of manufacturing it, by first extracting the resin of the lichens with alcohol, then bringing the extract thus obtained in contact with ammonia. J. Murdoch, of London, has received a patent for improving the art not to obtain a superior extract, but to simplify and quicken the process. He boils the litchins in an ammoniacal liquor in a close vessel, and condenses the ammonia as it is carried over. Thus the whole coloring matter is extracted rapidly, and none of the ammonia lost by boiling. It is rather surprising that this method was not sooner brought into use.

Mexican Grass Mattrasses.—W. Staufen, of London, has taken out a patent for the use of Mexican grass as a substitute for hair in mattresses. The bark or skin of this grass is first removed by passing it between rollers, and skutching it, and it then forms a good mattrass material. In England such patents are as easily obtained as any other; that is, substituting one material for another—applying it to a purpose for which it had not been previously used—and these patents are fully sustained by law. Our Patent Office generally pursues a contrary course, not in accordance, at all times, with the spirit of the patent code.

Reducing Gold and Silver Ores.—J. Forrest, of London, has received a patent for the following method of treating ores containing the precious metals. The quartz is first broken into small pieces, then immersed for about two hours in a hot solution of caustic soda, or any other alkali. After this the ore is removed from the alkaline bath and subjected to a white heat in a muffle retort, or other suitably constructed furnace. While under this heat the alkali will become fused, and, forming a flux, will facilitate the fusion of the metallic matter contained in the ore, and the separation of the precious metals from their combinations. Another part which this flux plays is to cause the small particles of gold or silver to agglomerate in large beads on the surface of the broken pieces of ore, and thus to prevent loss of the precious metals by sublimation. The ore having been subjected to a white heat sufficiently long to reduce the gold to a pure metallic state, is discharged into cold water, whereby it is rendered very fragile, and capable of being readily reduced to powder. The precious metals may then be separated by any of the ordinary washing or amalgamating processes.

Railroad Car Wheels.—John and William Olive, of Woolfield, Eng., have secured a patent for manufacturing railroad car wheels formed of two wrought-iron disks connected together at their circumference by a hoop, and at the center by a tube which forms the nave. The hoop and the tube are united to the disks by welding. The tyre is secured to the wheel thus formed by screws tapped into the latter. By this method a strong wheel must be the result, and cheaper, we think, than the wrought-iron spoke wheels.

Silvering Metallic Articles.—The following very simple method of producing the result indicated by the foregoing caption has been patented by Louis B. Advielle, of Paris:—

Dissolve 3 1-4 ounces of silver in 6 1-2 ounces of nitric acid, and thus produce the nitrate of silver. In ten quarts of soft water dissolve 2 lbs. of the cyanuret of potassium, and pour the nitrate of silver solution into it, and thus obtain the cyanuret of silver, which is white and soluble. To this is added 6 1-2 ounces of fine whiting, which, when well stirred, forms what is called by the inventor "Argentine water." It is kept for use in bottles or stone-ware baths or dishes having covers, and is diluted with twice its bulk of water. The articles to be treated are immersed in this liquor for a few minutes, then taken out, rubbed with dry whiting, washed, and rubbed with a dry cloth, and are stated to have a brilliant silvery appearance. The Argentine water must always be stirred up in the bath before the article to be silverized is immersed in it. Another method of applying it, is to keep it in stoppered bottles, which must be well shaken up before being applied to the metal article, which is accomplished by simply rubbing it on with a piece of cotton or linen. When the metal article has received a good coating of the Argentine water, it is rubbed with dry whiting, then washed in soft water, and dried with a soft cotton cloth. The Argentine water is applied successively by dipping the articles in it, or rubbing it on the articles until all parts of them are silverized; but one dip will be sufficient in most instances, when the operations are carefully conducted.

(Our Foreign Correspondence.)

Crossing the Alps by Railroad.—American Locomotives in Austria, &c.

VIENNA, Austria, May, 1856.

MESSRS. EDITORS—Once more among railroads and far away from the "unprogressives" I have at length reached this city after an exciting ride over a railway known here by the name of "Semmering," because it crosses a range of the Alps thus called. With a powerful locomotive we rushed up an inclined plane and shot through a tunnel, from whence we emerged upon the edge of a cliff, where we could see snow a thousand feet below us, and a couple of thousand feet below that, green valleys stretched away in the distance. After reaching this altitude, of course our "iron horse" required some refreshment, and I was amused at the manner a couple of women were sawing up his "dessert" of pine wood—for hard coal (and a hard, stony coal it is, too,) is used upon the railroads of Aus tria, aided in its combustion by pine wood frequently thrown in the furnace to keep the flames alive. The contrivance operated by these women consisted of an upright triangular frame, and another wooden triangle hung down from the top of this frame, to which was attached a common buck-saw. A saw horse, placed beneath this arrangement, was loaded with wood, and the "ladies" moved the saw forwards and backwards, thus cutting the wood up into the dimensions. As the teeth of the saw penetrated the wood, the instrument was made to descend by the weight of a box of stones ingeniously arranged on top of the movable triangle, working in grooves made at the summit of the original frame.

By the time I had noted this mechanical novelty the conductor's horn warned us all aboard, and we commenced descending into the valley. Our train of cars wound like a snake around the bases of high mountains; whenever it came to a mountain standing on the track, the locomotive dashed right through its bowels, and came out on the other side, described a short curve, and then bolted across a long viaduct over a very high valley, into the vitals of another snowy mountain, thus continuing onwards for more than twenty-five miles, passing through twenty-three mountains or parts of mountains, and over thirteen valleys, until we reached the plains. I then began to smooth down the hair that had risen up, on my head, upon commencing this almost fearful portion of the trip.

The Semmering railway is, unquestionably, one of the most extraordinary works of the kind in Europe. It was built by the Austrian government over a branch of the Alps, which, from their steepness, long presented serious obstacles to the construction.

The road, as we descended, often ran, for a mile or two, parallel with the track we had just left on the other side of the valley, but always on a descending grade, varying from between one in forty to one in one hundred, as indicated upon painted boards stuck up alongside of the road, whenever the grade varied. I was fortunate enough to get acquainted, in the cars, with a nephew of one of the contractors, who gave me considerable information about the length and hight of the various tunnels. The main tunnel, which is also the highest, is fifteen hundred and sixty-one American yards in length, (4683 feet) at an elevation of twenty-nine hundred and eighty-three Yankee feet above the sea—the decline, from the highest tunnel to the level ground, being over twenty-five hundred feet in a distance of barely seventeen miles. It is a single track, occasionally sweeping around the mountains in such rapid curves that I momentarily expected the train would pitch over into the yawning chasms beneath.

Arriving in this city, after passing over such a railroad, so substantially constructed in the bargain, has impressed me greatly with the progress of these Austrians, not at all depreciated by the fact that they use upon this same railroad many locomotives of American manufacture.

As we came along I saw many cotton mills, and bales of our southern staple being unloaded at the doors of the factories, which were, apparently, working under all the advantages that steam and labor-saving improvements could supply.

Since we have been here I have been into some of the workshops, and have there seen, in operation, various contrivances that denote the Austrians to be an enterprising go a-head sort of people, very different from those I have left behind me in Italy. J. P. B.

The Raining Tree.

The island of Fierro is one of the largest in Canarie Group, and it has received its name on account of its iron bound soil, through which no river or stream flows. It has also but very few wells, and these not very good. But the great Preserver and Sustainer of all, remedies this inconvenience in a way so extraordinary that man will be forced to acknowledge that He gives in this an undeniable demonstration of His wonderful goodness. In the midst of the island there grows a tree, the leaves of which are long and narrow, and continue in constant verdure, winter and summer, and the branches are covered with a cloud which is never dispelled, but resolving itself into a moisture, causes to fall from its leaves a very clear water, and in such abundance that cisterns placed at its foot to receive it, are never empty.

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TO CORRESPONDENTS.

A. B., of Mo.—It would not be possible to take up the dirt in our streets by machinery, unless the brush operated in a direction contrary to the motion of the wheels of the dirt-receiver.

C. R. M. W. of New York.—We will give attention to well written communications on the subject mentioned in your letter.

H. T. C. of ——.—We have never seen or heard of a map or globe made in the manner you propose. The idea appears to be a good one, and we should think a patent might be obtained for it. We hope you will send us as many new subscribers as you can on the new volume.

H. S. of Ohio.—Clay has been recommended for mixing with water to extinguish the flames; and it is a better substance than any you have mentioned. It would be very difficult to carry out such a feature in extinguishing fires, as the engines would be liable to have their valve ports clogged.

T. S. of Ohio.—The only safe way to remove the sulphur smell from new blankets, is to expose them to a current of warm, dry air.

H. W. G. of Min.—The covering of telegraph wires with gutta percha is not new. Many of the wires have been so covered.

J. C. R. of Mich.—We do not know where you can find the work to which you allude, on "Western Antiquities."

G. „ of Iowa—We are informed that Richards, Ellsworth & Co., of Chicago, Ill., can furnish you a machine for drawing fret lead.

G. T. of Iowa—John Thompson, of Pittsburg, Pa has a vise which will draw three sizes of fret lead.

W. H. B., of Pa.—We do not know of any work that treats especially upon the subject of water pressure engines; neither are we aware of any such engines being in operation in this country.

C. & A. of N. J.—We do not remember the name of our Georgia correspondent.'

H. R. B. of ——.—We cannot ascertain from the Patent Office whether your caveat is on file or not; the case not having passed through our hands we could not be recognized by the Office as the proper parties to ask for such information. The Commissioner will inform you: write to him.

Franklin Cross, Manningham, Ala., wishes to procure a mill for hulling rice.

J. B. of N. J.—The combination of the steam engines with the Jonval wheel shown in your sketch, could not be patented because of its want of usefulness; it would be a complex and expensive combination to supersede simple hand gearing.

W. P. of N. Y.—We have mailed your letter to Mr. Mosheimer. You will please to adopt, in future the usual channel of communication and not send your letters to us for mailing.

W. H. of Phila.—Your case has not been formally acted upon yet, but we are informed that a patent will issue.

C. O'L. of S. C.—The patent must necessarily be sent to you from the Patent Office, if issued, unless *you* order the Commissioner to address it to us. Our request in that respect would be disregarded. You had better let the patent go to you, and then you can re-mail it to our office for engravings, which will be just as well, and save you the trouble of writing to the Office.

C. C. L. of Mass.—The articles to which you refer can be found no where except in back volumes of the Sci. Am. They were never collected and published in book form.

N. C. S. of Ct.—We have written to the Department concerning your lost patent. As soon as a reply is received we will write you.

L. D. W. of Conn.—The most economical method for you to pursue is to maintain the steam of your boiler at 30 lbs., so as to have it ready to start in the morning. Don't let down the pressure at all, if you find it as safe to keep it up.

J. S., of Mass.—Your plan for increasing intensity or artificial light by placing a hollow double globe over and around the flame, is not new—engravers and jewelers often use a globe filled with water, for the purpose of condensing the rays of light in substantially the same manner as you propose.

M. B. S., of Hale's Eddy—Your plan for an hydraulic engines is very old.

W. M., of N. J.—You must use more lime as a flux in smelting your iron, in order to remove the sulphur.

A, McK., of Tenn.—The nature of cotton is very different from that of silk, and the same substances will not color both alike. You cannot color cotton with sulphate of indigo, but you can silk. If you neutralize the acid in the sulphate of indigo with chalk, it will color cotton; but then it will be but a fugitive blue. Our Southern States should attempt to revive the cultivation of the best qualities of indigo, as East India indigo is now very scarce and dear.

T. M. C., of Me.—The model and letters patent of the saw mill stirrup have come to hand, with your letter of the 23d, covering $12. The engraving will appear in about two weeks.

A. D. T., of Pa.—Six pounds of tallow, and one of good sperm oil, to which are added half a pound of black lead, make as good grease for the axles of wagons and carriages, as can be found any where. Another kind, made of five pounds of tallow and five of oil, to which half a pound of india rubber dissolved in turpentine is added, is also a good lubricator for the same purpose.

T. R. of New York.—We would like to see an apparatus constructed showing the exact motions of the earth and moon. The theory of the moon having no axial rotation is undoubtedly the most simple. There is something suspicious in the twenty-eight day axial rotation theory, because it must be positively exact. It is also not in harmony with the system of Laplace. We have received quite a number of letters on the subject, but none of them are sufficiently clear.

C. & P. of Ohio.—If you take the fall of water in feet of your spring and the quantity discharged per minute, and multiply them together, then divide by the hight in feet, to which you wish the water raised, you will obtain the quantity the ram will raise in one minute. Deduct a least twenty-five per cent. for friction.

L. L. of Montreal.—Myndert Vanschaick is President of the Croton Water Board, this city. A. W. Craven, is Chief Engineer. Direct to them by name and office and your letter will reach them.

C.K. of N.Y.—Your samples of straw paper have reached us; they are very good indeed.

W. C. McP. of Mass.—A very clear varnish for drawings is made of Canadian balsam dissolved in turpentine All turpentine varnishes however, are liable to have a sticky feel. Alcohol varnishes dry most rapidly.

R. H. J. of N. J.—If you boil hickory wood in a very strong decoction of logwood for about an hour; then, in a weak liquor of the sulphate of iron for fifteen minutes, you will color it a deep black. You must place the wood in the logwood with its butt end downward, and by a weight or other device hold it in a perpendicular position during the time it is being boiled. Almost every kind of wood can be colored black in this manner.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, June 28, 1856:—

G. W. G. of L. I., $30; J. C. T. of Ill., $25; J. R. of Pa., $50; W. G. H. of Pa., $60; T. R. B. of N. Y., $55; W. M. F. of O., $30; W. & W. B. T. of Mass., $30; A. R. of N. Y., $55; A. C. of N. Y., $30; J. M. of N. J., $25; W. & E. of Del., $25; R. & N. of Va., $25: G. P. of La., $30; J. C. of Conn., $15; G. H. G. Sen. of Miss., $30; H L. & Co. of Pa., $10; E. S. of Conn., $100; W. H. McN. of L. I., $30; J. R. A. of N. Y., $30; J. G. H. of N. J., $250; J. N. R. of N. Y., $55; T. J. C. of N. Y., $100; J. L. of Conn., $40; J. B. L. of S. C., $50; P. & W. of Ill., $25; L. A. D. of O., $25; C. S. P. of ——, $55; R. & G. of Me., $25; G. & G. of L. I., $15; N. S. S. of N.Y., $30 t W.P. M. of Wis., $30; J. & R. S. of N.Y.. $15; J.P. J. & Co. of Mass., $400; C. H. of Ill., $12; J. L. of Ill., $30; F. O. M. of O., $30; M. E. of Mich., $30; S. B. T. of Ct., $30; E. G. of Germany, $50: T. & A. P. of L. I., $50; B. & D. of Mich., $25; J. R. of N. Y., $25; T. T. P. of Wis.. $110; A. M. G. of N. Y., $55; G. L. of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 28:—

A. B., of Mass.; J. R., of Pa. (2 cases); G. P., of La., W. D., Jr., of Pa.; R. & N., of Va.; J. C., of Ct.; J. M., of N. J.; W. & E., of Del.; P. & W., of Ill.; L. A. D.. of O.; R. & G., of Me.; J. H., of Ind.; C. H., of Ill.; H.M., of C. W.; E. & A. S., of N. Y.; S. R. H., of N. Y.; T. & A. P., of L. I.; B. & D., of Mich.; J. R., of N. Y.; A. D. of France; C. B. A. C., of France; T, G., of France; A. M. G., of N. Y.; G. L., of N. Y.; T.T. P., of Wis. (2 cases.)

Important Items.

To the Unfortunate—We are no longer able to supply the following back numbers of the present volume Nos. 6, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 34, 35, and 37. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

Models—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Literary Notices.

The Microscope and its Revelations.—It affords us much pleasure to see the great work of Dr. Carpenter, F. R. S., re-published by Blanchard & Lea, of Phila., edited by Dr. Smith of Pennsylvania College. It is the most complete work in the English language, on the subject. Some idea of its completeness may be obtained, by stating that it is a large volume of 713 pages, illustrated with 434 excellent wood cuts. Its matter is beyond all praise, and we may add *criticism*. The construction of this wonderful instrument, and the principles upon which it is based, are fully described and illustrated. The best methods of using the microscope are fully described. Its revelations of minute organisms, hid from the natural eye, are beautifully illustrated. The appendix describes and illustrates its uses in surgery and its application in the *diagnosis* of *disease*, and is a most valuable chapter for the physician and student. In short it is a work which we regard as one of the most valuable ever issued from he American press.

The Life of Robert Fulton—Messrs. C. G. Henderson & Co., of Philadelphia, announce that they shall issue, July 4th, the Life of this eminent inventor. It will contain twenty-five colored engravings executed in the best manner, representing his numerous inventions in ocean navigation, etc., taken from his original drawings. It will contain all the prominent features in Fulton's life, and also his correspondence with European and American *savans* upon scientific subjects. The author of this novel work is J. Franklin Reigart, Esq., of Lancaster, Pa., an earnest and indefatigable friend to all the industrial interests of our country. We feel quite confident that this work will command attention. We certainly hope it will.

New York Directory for 1856.—We are indebted to the publisher, Mr. John F. Trow, for a copy of the New York City Directory for the present year. Compiler, H. Wilson. The work is a fine style of typographical perfection and of business enterprise. It contains about 1200 large pages and almost 150,000 names. All of these names were collected by means of agents sent specially over the city. The work of canvassing for the names commenced on the 2d day of May and the book was delivered to the public on the 16th of June, or in 38 working days. If this is not rapidity then we do not know what is. In its production there were 20 proof readers, 5 steam printing presses running day and night, and 200 binders. "It will thus be seen," as the editor truly remarks, "that the getting up of a Directory is a work of no ordinary labor." Published at 379 Broadway. Price $2·50.

Terms of Advertising.

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☞ All advertisements must be paid for before inserting.

NORRIS WORKS, Norristown, Pa.—Inglis, Carson & West, Iron and Brass Founders, Machinists, Boiler Makers and Steam Engine Builders—Manufacture Cornish Pumping Engines of an improved construction for mines and Water works, of any capacity. All kinds of Mining Machinery, Sugar Mills, Propeller Engines for Canal Boats, Blowing Cylinders, and all heavy machinery required in the Engineering business generally.
ANDREW INGLIS,
RICHARD R. CORSON,
43tf JOHN WEST.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had Ten years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.
American and Foreign Patent Attornies, Principal Office 128 Fulton street, New York.

BARREL MACHINERY—CROZIER'S PATENT is unrivalled in point of quality and quantity of work performed, and may be seen in constant operation at the Barrel Manufactory of the undersigned. For rights and machines address WELCH & CROZIER,
43 18* Oswego, N. Y.

TO CAR BUILDERS—For Sale, one new Upright Boring Mill for boring car wheels. Maker's price $600, will be sold for $400 cash. Address GEO. S. LINCOLN & CO., Hartford, Ct. 43tf

VRGNES' ELECTRO-CHEMICAL BATHS, attended by Prof. Vergnes, the discoverer, and Dr. Chas. Prince, proprietor, 710 Broadway. A positive cure for Rheumatism, and all diseases arising from the use of mercury or other minerals. Department for ladies. 1*

NOTICE—DISSOLUTION—The Partnership heretofore existing between the subscribers, is this day dissolved by mutual consent.
SAMUEL THOMAS,
RICHARD R. CORSON,
JOHN WEST.
Norristown, May 30, 1856.

COPARTNERSHIP—The undersigned have this day associated themselves together for the transaction of the Foundry and Machine business, under the firm and style of INGLIS, CORSON & WEST, at the Norris Works.
ANDREW INGLIS,
RICHARD R. CORSON,
JOHN WEST.
Norristown, May 30, 1856. 1

GROVER'S PATENT WIRE CUTTERS—A view of which is given in No. 42, this paper, are for sale wholesale and retail by E. D. & G. Draper, Hopedale, Milford, Mass. We are also sole agents for the sale of Dutcher's Patent Temples, Perry's Patent Parallel Shuttle Motion, Hayden & Wyllys' Paten Drawing Regulators or Eveners, Thompson's Patent Oilers, &c. 42 7*

A NEW AND SCIENTIFIC INVENTION—Dr Cheever's Galvano-Electric Regenerator. Patent issued Jan. 15th, 1856. A circular relating to the use of the instrument, embracing a general treatise of atony of the spermatic organs, the result of which tends to softening the medullary substance of which the brain is composed may be had gratis, and will be sent to any address by mail by their indicating a desire to receive it. All letters should be directed to DR. J. CHEEVER, No. 1 Tremont Temple, Boston 42 4*

FOR SALE—A second-hand saw mill engine and saw gearing, including two cylinder boilers 22 in. diam. 24 ft. long, with connection pipes and cocks, fire front, &c., upright cylinder 5 in. bore, 26 in. stroke, with iron gallows frame, steam gate, gauge, &c., two 6 feet balance wheels, eccentric, &c., iron carriage rack and pinions, saw gate, ways, stirrups, &c., all in good order. Price $400. E. WILBUR, Albion, N. Y. 42 2*

MECHANIC'S TABLES—A New Book. Containing areas, and circumferences of circles, circumferences of angled hoops, when angled outside or inside, cutting of boiler plates, covering of kerfs, solids, &c., weight of various materials. Miscellaneous notes, &c. By Charles H. Haswell, Civil and Marine Engineer. Author of Haswell's Engineers and Mechanics Pocket Book.—This book will be forwarded by mail free of postage for fifty cents. Apply to CHALES H. HASWELL, No. 6 Bowling Green, New York. 42 3

LAWRENCE SCIENTIFIC SCHOOL—Harvard University, Cambridge, Mass. The next term will open on Thursday, Aug. 28th. For catalogue containing full particulars address E. W. HORSFORD, Dean of the Faculty. 42 8

$1,000 A YEAR—An Agent is wanted in every town in the Union to manufacture an article of daily consumption; can be manufactured at the Agent's dwelling; secured by copyright; sale as permanent as flour. Full particulars sent on the receipt of 3 cents. Address J. T. HORNE & CO., Box 4,551, New York. 42 4*

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM. BURDON, 102 Front st., Brooklyn. 41 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 41 tf

1,000 YOUNG MEN of small means can make over 100 per cent. at home or abroad. Profits certain—no "chance." Business new, easy, useful, honorable. Apply (inclosing a stamp) to Box No. 533, Detroit, Mich. 1*

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 500 lbs., price $240; other sizes in proportion. 27 e3w

CLOCKS for Churches, Court Houses, &c. Regulators and time pieces for jewelers, railroads, offices, &c. Also glass dials of any size for illuminating, and other kinds manufactured and warranted by the subscriber.—JOHN SHERRY, Oakland Works, Sag Harbor, N. Y. 37 12 eow

PATENT IMPROVED GLOBE VALVES that can be made perfectly tight when new, and easily re-ground without being removed from the pipes; also Gauge Cocks with the same improvement; also plumber's brass work, steam and gas cocks, oil cups, &c. Rights for sale. McNAB, CARR & CO., 133 Mercer st., New York. 33 6*eow

STEAM ENGINES—The subscriber is now prepared to furnish steam engines from 1 to 100-horse power on the shortest notice. Having tested his Patent Oscillating Engine, is of opinion that nothing superior is offered in the market, As the peculiarities and advantages of his engines are too lengthy to be enumerated in a mere advertisement, he most respectfully requests those wishing to purchase or examine to call at Messrs. Darlington & Co's., No. 17 Railroad Buildings, cor. of Franklin and Center sts., where a magnificent specimen of an oscillating engine is in successful operation, or at 22 Liberty st., where any desired information may be obtained. The right of this patent is also for sale. JUAN PATTERSON, Patentee, New York City. 42 2*

M. & J. H. BUCK & CO., Lebanon, N. H.—Manufacturers and dealers in all kinds of woodworking machinery, such as Daniel Gray & Wood's Timber Planing Farrow, improved Cylinder Planer, with tapering matchers, Power and Foot Mortising Horizontal and Vertical Boring, Tenoning, Sash and Cornice molding and Hub Mortising Machines, Spoke Lathes, Scroll Saws (Wright's patent,) also a large double Tenoning Machine, capable of making one or more tenons at the same operation, Circular Mully and Gate Mills, portable Grist Mills, &c. Also Fosters' and Buck & Co's. patent Presses for making Fosters' Artificial Granite Building Block. 40 4*

MACHINE BELTING, Steam Packing, Engine Hose—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 deg. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise at our warehouse. New York Belting and Packing Co., John H. Cheever, Treasurer, No. 6 Dey St., N. Y. 40 4*

GREAT WESTERN MACHINERY AND PATENT AGENCY—The undersigned have established a house for the sale of machinery and patent rights at No. 64 Randolph St., Chicago, Ill.
38 10* RICHARDS, ELLSWORTH & CO.

BOILER FLUES—All sizes and any length promptly furnished by JAMES O. MORSE & CO., No. 79 John st., N. Y. 37 3mos

WROUGHT-IRON PIPE—Plain, also galvanized inside and outside, sold at wholesale by JAMES O. MORSE & CO., No. 79 John st., N. Y. 37 3mos

FORBES & BOND, Artists, 89 Nassau st, N.Y., Mechanical and general Draughtsmen on wood, stone, &c.

THE NEW YORK DAILY SUN for $2 a year. The miracle of the present age is accomplished by the Publisher of the New York Sun, in furnishing subscribers in clubs of thirty or more with the daily paper by mail for $2 a year. The Sun commenced in 1833; is the oldest, as well as the cheapest of all the cheap daily newspapers. It contains the latest news to be had by telegraph, mail, or express—is independent on all subjects, and has for its platform "Common Sense." Club rates—payable in advance, 5 copies one year $16·50, 10 copies $30; 15 copies $41·25; 20 copies $50; 25 copies $56·25; 30 copies $60. Single copies $4 a year. Papers to be sent in one wrapper, and only by mail, and to be directed to one person only. The postage on the Daily Sun within the State of New York is only 78 cents per year, and only $1·56 to any other part of the United States. Specimen copies sent gratis on application. Letters (always post paid) to be directed to MOSES S. BEACH, Sun Office, New York City. 37 tf

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
LOGAN & LIDGERWOOD,
13 1y* 9 Gold st., N. Y.

VERTICAL STEAM ENGINE and Boiler for Sale at a bargain. The Engine is nearly new, and well finished. The cylinder is 9 inches; the fly wheel is a band wheel 5 feet in diameter, face 14 inches, turned off, weight 1350 lbs. The boiler is 20 feet long, 42 inches in diameter, 1 flue 17 inches, well braced wrought-iron heads; it is very strong, and has been in use about six months; is about 15-horse power. Cost $1200, will be sold or $675 cash; delivered on ship board. Apply to MUNN & CO., at this office.

MACHINISTS' TOOLS.—Meriden Machine Co have on hand at their New York Office, 15 Gold street, a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 32 13*

FILMER & CO., Electrotypers, and Manufacturers of Electrotype Materials, 128 Fulton st., N. Y. Molding Presses, Batteries, Cases, Backing Pans, Shaving Machines, Metal Kettles, Planes, Blocks, Building Irons, etc., etc., on hand, or furnished at short notice, and at moderate charges. Adams' Improved batteries and black-lead machines also for sale. 23 tf

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 33 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.
Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York Boston, 27 State street, and Lowell, Mass, 19 6m*

GRAIN MILLS—EDWARD HARRISON, of New Haven, Conn., has on hand for sale, and is constantly manufacturing to order, a great variety of his approved Flour and Grain Mills, including Bolting Machinery, Elevators, complete with Mills ready for use. Orders addressed as above to the patentee, who is the exclusive manufacturer, will be supplied with the latest improvements. Cut sent to applications, and all mills warranted to give satisfaction. 42tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co New Haven, Conn. 19 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.— A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 31tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 41 tf

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Science and Art.

Bronze Colors for Paper from Brazil-wood and Logwood.

When alum is dissolved by heat in a decoction of Brazil-wood, which has been cleared by standing for several days, a precipitate is produced on the cooling of the solution, which increases in proportion to the length of time the fluid is left standing, and at last contains nearly all the coloring matter. If this precipitate be washed once with water, and spread in a tolerably thick coating upon paper, it dries with a beautiful shining gold color, with a slight tendency to green, very like the dried wing-cases of the common *cantharides*. If the precipitate be made into a paste, mixed with a little size and glaze (prepared by dissolving wax in soap,) and then laid on the paper by means of a brush, it may be polished with an agate or glass ball, and then acquires a beautiful yellow metallic luster, exactly like bronze. It is, however, necessary for this purpose, that the paper should be so thickly coated with the color as to render it quite opaque.

A coloring matter obtained from logwood has exactly the same properties, but its preparation is somewhat different, and the metallic luster has more of a coppery tint, the former rather resembling brass.

If a freshly prepared concentrated decoction of logwood be heated in a copper kettle, and then mixed with chloride of tin, an abundant dark brown precipitate is obtained, which is to be collected without washing. This precipitate, when employed like the preceding one, communicates a copper bronze color to paper. A different shade is obtained when the hot decoction is first mixed with a little alum, and afterwards with a still smaller quantity of bi-chromate of potash; this precipitate is darker, and its luster, when laid on paper, has more of a yellowish tinge, so that it forms an intermediate shade between the two other colors.

All these precipitates are particularly adapted for the fabrication of marbled papers and paper hangings; for if the mixture of the size, glaze, and color is well effected, the metallic luster makes its appearance even on rubbing with a stiff brush.

The following are methods of preparing these colors:—

10 lbs. of good Brazil-wood are deprived of their coloring by repeated decoction in soft water, and the collected decoctions left standing for from four to eight days in an open wooden tub. The clear decoction is then poured away from the sediment, and put again into a clean vessel. Part of it is then heated, and whilst hot 5 lbs. of alum are dissolved in it, and the solution is mixed with the remainder. The precipitate will have collected in about eight days; it is strained through cloth till it acquires a pasty consistence, and preserved for use in that form.

10 lbs. of logwood are boiled twice with soft water, and the strained decoction evaporated to one-half in the kettle; 10 oz. of chloride of tin are then added, and the precipitate is strained through cloth.

The decoction is prepared and concentrated as before, and 10 oz. of alum are added to it, and allowed to dissolve; powdered bi-chromate of potash is then sprinkled in gradually as long as a sample taken out and laid on paper still appears dark blue; for this purpose 1 1-4 oz. are generally required. Too much of the bi-chromate of potash renders the color black, and spoils it. This is also strained through cloth.

Experiments on Digestion, and with Poisons.

The Philadelphia *Ledger* states that the dogs captured in that city are undergoing some interesting operations under two young physicians—Drs. Walton and Scholes, who are endeavoring to obtain a more thorough knowledge of digestion, by experimenting with the dogs condemned to death. Those selected as martyrs to science are well fed upon meats, bread, &c., and then allowed to exist from a half to two hours. After killing them, the stomach is removed, and the work of digestion noted Experiments have been made to ascertain the effects of strychnine, and chloroform as an antidote. One dog, just as he was, to all appearances, in the last agony of death, from the effects of this poison, had chloroform administered to him, and in a few minutes he entirely recovered, and ran about as if nothing had been given him. He was afterwards killed by a second dose of poison. These experiments are to be continued for some time.

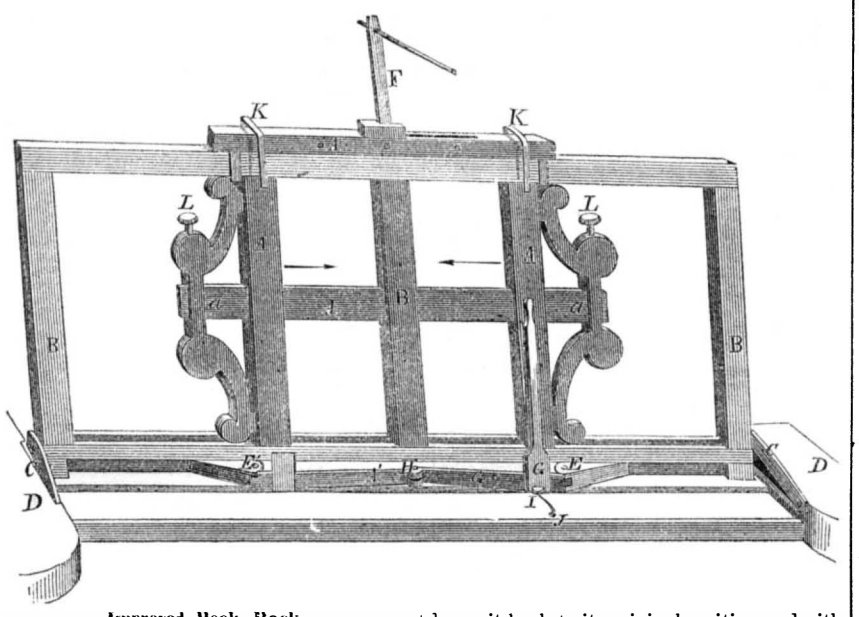
Curious Crystals.

On the coast of Africa, between Saldanha Bay and the Island of Ichaboe, the beach for miles is covered with sharp crystals, in size about four inches long, two broad, and one thick. Many of them envelope sand as if they had once been in a fluid state, and closed around the sand on the beach. These crystals are soluble in nitric acid, and are principally composed of the carbonate of lime and magnesia.

Composition of Human Milk.

From eighty-nine analyses of milk from women of varying ages from 15 to 25 years, Bequerel and Vernois obtained—water 889·08; sugar, 43·64; casein, 39·24; butter, 26·66; salts, 1·38. Total, 1000. The milk of young women from 15 to 20 years of age contained more solid constituents than that of those from 30 to 40 years. The milk of women with dark hair was found to be richer than that of those having light hair. When fed on spare diet, the milk of women becomes watery and deficient in casein and butter.

IMPROVED MUSIC BOOK RACK.



Improved Book Rack.

The improvement illustrated in our engraving presents several novel features. The rack consists of two frames, A A′, B, sliding laterally one within the other. A A′ moves, but B is stationary. The base, D, and frame, B, are hinged together by links, C, so that the apparatus may be folded together into small space.

The book rests upon the base, A′, which forms part of frame, A, and slides laterally. A′ is jointed at E E′, so that for very thick books the base, A′, may be pulled out and widened. F is a lamp support.

The leaves are turned by means of the tongues, G, of which there are several, all hinged at H. A small elastic spring cord connects with each tongue at H. The tongues after being placed between the leaves of the book, are fastened open by means of the catch, I, connected with which is a button, J. By touching J the stop, I, is moved, and one of the tongues released. The elastic cord previously stretched by opening the tongue, now draws it back to its original position, and with it the leaf. The upper part of the book is held by the hooks, K K. When it is desired to lengthen the sides of frame A, the end pieces, *a*, may be moved out and secured by screws, L.

This rack possesses all the advantages of the ordinary kind, besides many new and useful qualities. It prevents sheet music from slipping out at the bottom; turns the leaves at the instant required; holds the book firmly; keeps it smoothly open at the proper place, and thus prevents damage to binding, which is so common to music books; enables the music to be shifted laterally with ease, &c. We might mention other advantages, but those we have named are sufficient to inform the reader that the improvement is a highly useful one. It should form a part of every organ, piano, or melodeon.

Mr. Thomas Ward, of Birmingham, Pa., is the inventor, of whom further information can be had.

Patented May 20th, 1856.

Washing Fine Woolen and Muslin Articles.

The gall of oxen and cows has been used from time immemorial for removing grease and dirt, from fine woolen goods of delicate colors. Its action is the same as soap in removing the grease, while it is almost inert regarding the colors. In the hands of skillful persons, however, soap is just as safe, and is more pleasant to use, because the gall has an offensive odor. To use the gall, it should be mixed with just as much rain water as will allow the woolen article to be squeezed and handled freely. It requires considerable handling of the article in the liquid before the gall acts thoroughly. After the dirt and grease are removed, the dress, shawl, or whatever it may be that is washed in it, should be thoroughly rinsed in clean soft water. It will take three or four fresh supplies of water to remove all traces of the gall, from the goods, and none must be left in on account of its offensive smell. This is a very safe process of washing fine woolen articles of light green, blue, and various other delicate colors. Children's dresses of fine merino cloth may be safely washed in this manner. One gall will suffice for a small dress. Another plan, and a better one for washing fine articles of dress is to dissolve some fine soap in hot water, and allow it to become quite cold, then wash the article in this, taking care not to rub it violently. The soapsuds should be quite strong, or the soap will be decomposed by the grease in the article to be washed. The suds must be thoroughly rinsed out of the articles in cold soft water. Scented soap is the best to use for such delicate operations, because it imparts an agreeable perfume to the article of dress washed.

Another process for washing fine muslins of delicate colors, is to take some wheat bran—about two quarts for a lady's dress—and boil it for half an hour in some soft water, then allow it to cool, strain the liquor, and use it as a substitute for soap suds. It removes dirt like soap, is inert regarding the colors, and requires to be rinsed out in only one clean water, and starching is unnecessary. This is the best method of washing fine muslins and calicoes. A great number of beautiful dresses are often spoiled in washing by the discharge of their colors, from the use of warm suds. In all cases, the suds and rinsing water for colored articles of dress should be used as cold as possible.

A Cheap Red Fire.

Take 3 parts of powdered celestine, 2 parts of sulphur, and 3 parts of chlorate of potash, by weight, and mix them together.

Sharpening Old Files with Acid.

Make up some strong soapsuds in a pail and steep the files in it for half an hour. After this take and brush them well in the suds to remove all the grease and dirt from the creases, after which they are to be rinsed in clean soft water. Now, make up in a clean pail or stone-ware crock, which is better, an acid liquor composed of one pint of sulphuric acid to ten or twelve of soft water, and stir it well. Put the files perpendicularly in this for an hour, and examine them two or three times during the operation. The liquor must cover the files from the point to the shank. The acid attacks both sides of the file ridges, and eats away a portion of the steel, thus making them sharper. If the liquor is heated, the action of the acid is more rapid, and intense, but no person should pour sulphuric acid into hot water, as it is liable to spatter out in the face of the person pouring it in. This action does not take place by pouring the acid into cold water. Many accidents of burning with vitriol have resulted to inexperienced persons from want of knowledge regarding this phenomenon. When the files are properly *bit in*, by the acid, they must be rinsed in soft water containing some urine, or a little dissolved sal soda; they are finally rinsed in warm soft water and are fit for use.

A Lightning Well Borer.

During a recent thunder-storm at Kensington, N. H, the lightning descended perpendicularly in an intense discharge into a pasture field, and made a hole about a foot in diameter and 30 feet deep, forming a well which soon filled up with good water.

Maryland Artesian Wells.

An artesian well has recently been sunk to a depth of 185 feet and a full supply of good water obtained on the North Point battle ground, near Baltimore, Md., a place heretofore very deficient in that respect. This is the third artesian well in the State of Maryland; the other two being at Frederick and Annapolis.

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